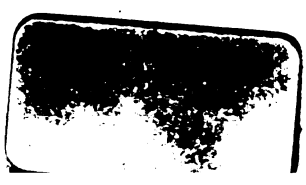


71.

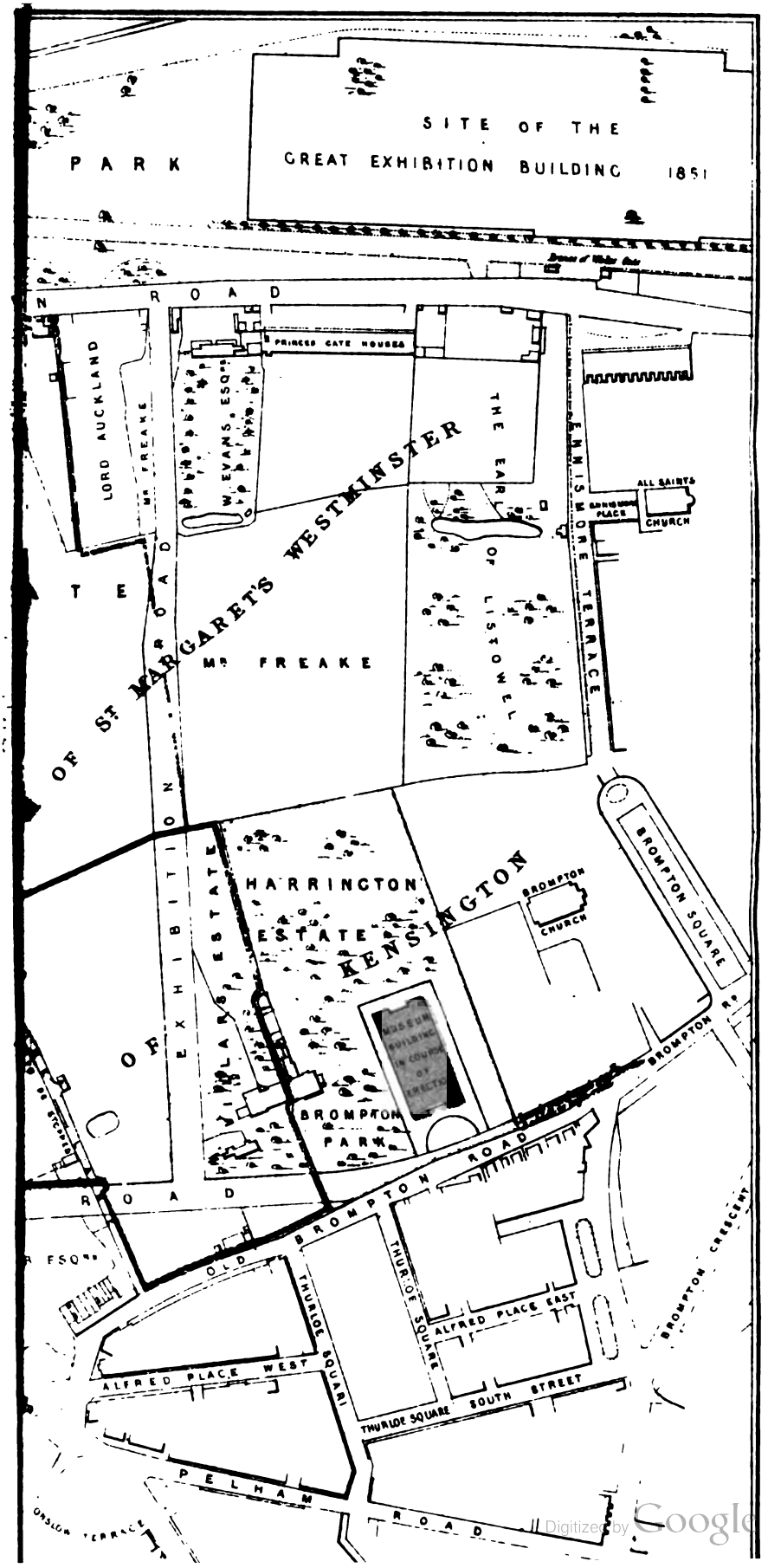
THIRD REPORT

OF

THE COMMISSIONERS

FOR THE

EXHIBITION OF 1851



Transmitted with the Compliments of
Her Majesty's Commissioners.

THIRD REPORT

OF

THE COMMISSIONERS

FOR THE

EXHIBITION OF 1851,

TO THE

RIGHT HON. SIR GEORGE GREY, BART., &c. &c.

ONE OF HER MAJESTY'S PRINCIPAL SECRETARIES OF STATE.

Presented to both Houses of Parliament by Command of Her Majesty.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
FOR HER MAJESTY'S STATIONERY OFFICE.

1856.

TABLE OF CONTENTS.

PLANS.

THIRD REPORT

OF THE

COMMISSIONERS FOR THE EXHIBITION OF 1851,

TO THE

RIGHT HON. SIR GEORGE GREY, BART., &c. &c.

One of Her Majesty's Principal Secretaries of State.

Sir,

In conformity with the Provisions of the Supplemental Charter which Her Majesty was graciously pleased to confer upon us on the 2nd December 1851, we have now the honour to transmit to you, for the purpose of its being laid before Her Majesty for Her approbation, the Third Report of our proceedings as Commissioners for the Exhibition of 1851.

Before proceeding to detail the results of our labours in the period that has elapsed since the date of our Second Report on the 11th November 1852, it appears desirable that we should briefly recapitulate the principal features of that Report, as a correct appreciation of the views therein expressed, and a recollection of the acts therein stated to have been already performed by us towards the practical execution of those views, will facilitate a proper understanding of the contents of the present Report. Second Report.

It was shown by us on that occasion, that there is probably no country in which greater efforts are made than in this for the promotion of Science and Art, those sure tests of the advancement of a nation in the scale of civilization and of national prosperity, and that the State and general Public alike contributed their share, and with no sparing hand, towards that end. At the same time it was made to appear, that owing to a want of system, and of economical application of the forces thus gathered together, a great part of the

beneficial effects that might be expected to ensue, was lost; that in other countries, where no such obstacles existed, a much greater advance, relatively speaking, was being made, and that we were driven to the conclusion, from the experience of the Great Exhibition of 1851, and an attentive consideration of the display there collected, that it was most important for the maintenance of the pre-eminence of Great Britain as the centre of the industry of the world, that no time should be lost in endeavouring to provide an efficient remedy against the inevitable result of the continued existence of such a state of things.

We proceeded to show that independently of the above-mentioned want of system, a no less important difficulty was to be found in the want of an appropriate locality in which to develop the means of supplying the deficiency thus shown to exist. To remedy the first, we suggested a system, which, based upon the arrangement and classification adopted with such great success in the Exhibition of 1851, had in view the promotion of Industrial Science amongst the manufacturing population of this country, at the same time that it would admit of the juxtaposition of the numerous Institutions, whether dependent on Government or on private support, which have in view the advancement of Science and Art in their various branches, and also establish a central point of union for those who in so many ways devote their energies to the same ends, especially in respect of the practical application of Science and Art to Productive Industry. To provide a remedy for the second want, we showed that the purchase of an extensive site was indispensable, and we specified certain purchases that had been made by us accordingly at Kensington Gore, with the concurrence of Her Majesty's Government, adding that other negociations were still pending.

It will be our duty in the present Report to detail the satisfactory progress that has been made in respect of both of the above-mentioned objects, commencing with the latter, namely, the acquisition of an appropriate site for future operations connected with our proposed scheme itself.

Speech of Her Majesty at the

The speech delivered by Her Majesty at the opening of the present Parliament, immediately subsequent to the presentation of

our Second Report to Her Majesty, contained the following passage:— Opening of the Session of 1852–53.

"The advancement of the Fine Arts and of Practical Science will be readily recognized by you as worthy of the attention of a great and enlightened nation. I have directed that a comprehensive scheme shall be laid before you, having in view the promotion of these objects, towards which I invite your aid and co-operation."

In conformity with this gracious recommendation on the part of Her Majesty, and in fulfilment of the assurance given to us by Her Majesty's Government, as mentioned in our last Report, to the effect that they would recommend to Parliament the contribution of the sum of 150,000*l.* towards the purchases contemplated by us, the Chancellor of the Exchequer, Mr. Disraeli, brought the whole subject under the notice of the House of Commons, on the 6th December 1852, and after a lengthened discussion the motion submitted by him for the grant of the above-mentioned sum was agreed to unanimously. We would refer to the Parliamentary Debates for the full particulars of what passed on this occasion. Parliamentary Vote of 150,000*l.*

This amount, added to a similar sum of 150,000*l.* advanced by ourselves out of the surplus funds at our disposal, furnished an available sum of 300,000*l.* applicable to the land purchases in question. Our last Report mentioned that we had already secured the Gore House estate, of 21 acres, and the adjoining Villars estate of 48 acres. By means of subsequent negociations we acquired 17 acres of the estate of the Earl of Harrington that were deemed indispensable for the completeness and development of the capacities of the property, and in this manner an extent of land of about 86 acres was secured. These various estates will be found distinguished in the map prefixed to this Report, which also specifies various minor arrangements, exchanges, &c., effected by us for the improvement of the property. Particulars of land purchases.

Another map is given at the end of the Report, showing the situation of the estate in reference to the metropolis generally.

It being indispensable for the proper opening-up of the estate thus acquired, and for the improvement of the neighbourhood generally, that new lines of road should be formed across the property, and the various adjoining proprietors being found willing to co-operate New Roads.

with us in this respect, we made arrangements, with the assistance of Mr. Cubitt, for the formation of the different roads specified in the above-mentioned map. These roads, the whole of which, with one small exception, are of the width of either 80 or 100 feet, and extend over a total length of 8,930 feet, or nearly 1¾ miles, probably constitute as a whole the finest series of roads that the metropolis contains. The contract for their construction, with the exception of a small portion otherwise executed at an expense to us of 300*l.*, was taken by Mr. William Jackson at the sum of 17,980*l.*, about two-thirds of which is payable by the Commission, and the remainder by the other proprietors benefited by them. They will be entirely completed, according to the contract, early in the present year.

Further land purchases necessary.

It will appear obvious on reference to the map, that the acquisition of the three properties already spoken of, owing to their irregular configuration and want of compactness, was insufficient to make the estate worthy of the great national objects for which it is destined. In addition to the fact of there being a public lane crossing the whole length of the estate, which we had no power to interfere with, a wedge-shaped piece of ground entirely covered with houses (indicated in the map), penetrates to the very centre of the property, and we found ourselves in other respects unable to proceed further by means of amicable negociations. We were therefore under the necessity of applying to Parliament for a private Act, with the usual compulsory powers. At the same time the funds remaining at our disposal, out of the sum of 300,000*l.* before referred to, were seen to be inadequate for the purpose of completing the necessary purchases, which, although extending over no great extent of space, were, from their having reference to land already occupied by buildings, of an obviously expensive character.

Additional Votes by Commission and Parliament.

Under these circumstances it became our duty to consider how far it was in our own power to advance out of the unappropriated surplus funds still remaining in our possession, the amount required to effect the purchases in question, supposing the necessary Parliamentary powers to have been obtained; and we resolved to contribute the further sum of 15,000*l.* accordingly, making a total outlay of 165,000*l.* on our part, and leaving in our hands a balance rather exceeding 20,000*l.*, which appeared to us the minimum which we

could safely retain for the purpose of meeting our current expenses and providing for contingencies.

Our next step was to bring this resolution under the notice of the Lords of the Treasury, in a letter dated 23rd Sept. 1853, in order to ascertain how far they might be disposed to recommend Parliament to make any contribution supplemental to the original vote of 150,000*l.*, in aid of the same objects; and we submitted detailed estimates of the sums that would be required to purchase a greater or less extent of the unacquired land, lying within the square defined by the new roads, so as to leave the Treasury the most entire discretion as to the precise extent to which (in the event of their entertaining our application favourably) they might desire to invite the co-operation of Parliament in the matter.

The result was that Her Majesty's Government undertook to recommend Parliament to make a further grant of 25,000*l.* towards the purchases in question. This sum was subsequently increased to 27,500*l.* in consequence of the success of certain negociations with Lord Kensington, the proprietor of the fee simple of the Gore Lane estate, whereby considerable reversionary advantages were obtained at a very small expense.

The correspondence between the Treasury and ourselves on the subject of the further land purchases to which we have referred, will be found set forth in Appendix A. (omitting the detailed estimates enclosed in our letter of the 23rd September 1853, and any matters calculated to prejudice pending negociations).

By these means a total fund of 342,500*l.* has been obtained, of which 177,500*l.* is due to the liberality of Parliament, and 165,00*l.* has been contributed by ourselves. The map prefixed to this Report indicates the precise extent of land that has been already purchased or is now in process of being purchased, with that fund, which, in addition to the expense of the actual purchases themselves, suffices to cover the whole outlay connected with (1) the formation of the great roads we have described, with the necessary sewers, &c.; (2) the purchase of the different leasehold interests on the property rendered necessary by the construction of those roads; (3) the redemption of the land tax and other charges on the estate; and, further, every other item of expense connected

with the satisfactory preparation of the property for its destined national objects, and with the permanent development of its great capabilities.

Act of Parliament obtained.

The Act of Parliament for which we applied in the Session of 1854 received the Royal Assent on the 3rd July of that year, having passed both Houses of Parliament without any serious opposition.

This Act, entitled "An Act to authorize the making certain Roads and stopping up certain Lanes and Footways between Kensington Gore and Brompton in the County of Middlesex, and for otherwise facilitating the Formation of a Site for Institutions connected with Science and the Arts," confers upon us the necessary powers for the purchase of the different properties which, in pursuance of the arrangement with the Treasury just referred to, it had been resolved to acquire. It is given at length in Appendix B. The whole of the negociations undertaken by us in pursuance of those powers, although not unattended with difficulty, are progressing satisfactorily towards a final settlement; but until they shall have been completed, and all the matters connected with the preparation of the site finally adjusted, we are, of course, unable to close the Land Purchase Account.

Land purchases profitable as an investment.

Although the total amount invested in the purchase of the Kensington Gore estate may appear to be large in itself, yet, under the circumstances of the case, there is reason for believing that the terms upon which it has been acquired are not only not excessive but are advantageous to the public, and we have good authority for stating that its value at the present time exceeds its cost. The value of the property near the estate is also known to have much increased in consequence of the character imparted by it to the neighbourhood.

Death of Mr. Cubitt.

We cannot conclude the observations which we have now submitted on the subject of the land which is to form the basis of our future operations, without the expression of our deep regret at the loss we have recently sustained in the death of Mr. Thomas Cubitt, of whose services we had occasion to speak in our Second Report. He had continued zealously for a lengthened period, and throughout the whole time of the delicate negociations which we

have had to carry on, to devote no small portion of his valuable time to our service entirely gratuitously. Having been of such great assistance to us in his life time, it becomes us to offer this public testimony to his memory now that he has passed away.

Use of grounds.

It has been our object to afford facilities to the public for enjoying the use of the grounds of the estate as occasion offered. In addition to giving visitors to the Exhibitions held in Gore House by the Department of Science and Art access to those grounds, two large fêtes have, with our permission, been held in them in the years 1854 and 1855, the former on behalf of the funds of the Consumption Hospital, which is situated in the neighbourhood of the estate, while the latter was one of the periodical fêtes of the Horticultural Society. We have already received and complied with another application for the loan of the grounds during the present summer.

Removal of the Crystal Palace.

It will be proper that we should submit a short Statement of the fate of the Exhibition Building (to which the name of the Crystal Palace was given by the public voice) in continuation of the account of the building contained in our First Report (pp. xxiv. to xxx.) It will be remembered that by the terms of the Royal Warrant, empowering us to take possession of the site in Hyde Park, for the purpose of erecting it, and the corresponding Deed of Covenant with Her Majesty entered into by us, we bound ourselves to remove the building, and to restore the site to the Crown in as near as might be its original state, before the 1st June 1852. On the conclusion of the Exhibition we were accordingly prepared to take the necessary steps for the removal of the building, and gave orders to the contractors to that effect. The strong public interest, however, taken in its preservation, owing to its intrinsic beauty, as well as to a prevalent impression that it might be applied to purposes of permanent utility, had meanwhile led to a movement in favour of its retention; and the House of Commons, on the 29th of July 1851, agreed upon an address to Her Majesty, by a majority of 75 to 47, praying Her to give orders for such retention till the 1st May 1852, in order that an inquiry might be in the mean time made, "whether the building, or any portion of it, could be adapted to purposes of public utility and recreation." In conformity with this vote the Treasury appointed

a Committee of Enquiry consisting of Lord Seymour, Sir William Cubitt, and Dr. Lindley, to report to them upon the subject; and their Report was laid before Parliament early in 1852. The question of the preservation of the building was brought before the House of Commons for final decision on the 29th April 1852, when the motion for its retention was defeated by 221 to 104. Notwithstanding this adverse vote, the unwillingness generally felt to witness its destruction led to the formation of a Joint Stock Company, under the name of the "Crystal Palace Company," for the purpose of purchasing the structure, and removing it to some permanent site in the neighbourhood of London, where it might be made sufficiently attractive as a place of exhibition and amusement, to form a remunerative speculation to the shareholders.

The building was accordingly purchased of Messrs. Fox, Henderson, & Co., for the sum of 70,000*l.*, and an eligible site having been found near Sydenham, the ceremony of raising the first column of the New Crystal Palace, formed in great measure of the materials of the one in Hyde Park, but with such improvements in construction as experience had shown to be advisable, took place on the 5th August 1852. The opening of the building and the surrounding park to the public, was celebrated with great state in the presence of Her Majesty, on the 10th June 1854, the inaugural ceremony closely resembling that adopted on the occasion of the opening of the Exhibition in Hyde Park.

The present Report appears to be scarcely the place for dwelling upon the merits of the Crystal Palace in its present permanent position, which are so highly appreciated by the public of this country. At the same time we cannot refrain from stating that an undertaking upon which a capital of no less than a million and a quarter sterling has been expended,—which has received (up to the close of last year) as many as 2,444,241 visits on the part of the public,—and which has for its professed object one so entirely analogous to that for which we are ourselves incorporated, viz., the promotion of Science and the Fine Arts, has not failed to command our warmest wishes for the success which it so well deserves.

Final settlement of accounts with Messrs. Fox, Henderson, and Co.

It is obvious that the receipt by the contractors of the above-mentioned sum of 70,000*l.* for the materials of the building in lieu of the 33,250*l.* at which they had been valued as old materials, was calculated to relieve them entirely from the pecuniary loss apprehended by them in connexion with their contract with us, and against which, as mentioned in our first Report (page xxx), we had undertaken to secure them; and it therefore became our duty to examine into their altered financial position as compared with that existing at the time when we advanced to them the sum of 35,000*l.* on the 7th November 1851, in consideration of their losses as then estimated. The result of our inquiries was that, acting on a minute adopted by us on the 14th January 1852, to the effect that if the materials of the building were sold for a higher sum than that estimated, the excess should be shared in equal proportions between the Commission and the contractors, the sum of 4,505*l.* 1*s.* 5*d.* was found to be repayable to us by Messrs. Fox, Henderson, and Co. out of the advance of 35,000*l.*, in addition to the cancellation of a balance of about 5,000*l.* remaining due by us on account of the original contract. On the payment to us, on the 11th November 1853, of the sum of 4,501*l.* 1*s.* 5*d.* just mentioned, our accounts with the contractors were finally closed, and the necessary legal releases exchanged.

Financial position of the Commission.

In our last Report we estimated the surplus that would remain in our hands, after completing all the services immediately connected with the Exhibition at about 173,000*l.* (see Appendix A. to Second Report, p. 44). On making up the accounts, however, after those services had been finally adjusted, it was found that the Exhibition surplus was not less than 186,436*l.* 18*s.* 6*d.* A statement of the Receipts and Expenditure of the Commission, duly audited by the Governor and Deputy-Governor of the Bank of England, continued from the date of the former Returns, viz., the end of February 1852, and extending to the end of December 1855, is given in Appendix C. It will be seen from this Return, that in addition to the above-mentioned balance of 186,436*l.* 18*s.* 6*d.* carried forward to the credit of our Estate Account (into which all our other accounts have now been

merged for the sake of convenience and simplicity), we have received in the period in question 157,500*l.* on account of the Parliamentary votes of the Sessions 1852–53 and 1854–55, and 5,401*l.* 6*s.* 11*d.* from rents and miscellaneous receipts, making a total of 349,338*l.* 5*s.* 5*d.*

On the other hand we have paid a total sum of 247,595*l.* 8*s.* 7*d.* on account of the estate, for land purchases, tenant's compensations, road-making, and other items, leaving a balance in hand on the 31st December last of 101,742*l.* 16*s.* 10*d.* The whole of this balance, with the addition of the balance of 20,000*l.* as yet unexpended out of the grants made by Parliament, will be required to provide for the payment of the remaining amount of purchase money for the Harrington estate, and sundry purchases of land not yet completed, as well as the cost of buying up existing leases, reversionary interests, &c., and the necessary reserve fund to meet contingencies.

It will be our duty to continue these accounts, and present an annual statement of our financial position, and, hereafter, a finally corrected balance sheet, when every matter connected with the purchase and improvement of the Kensington Gore estate shall have been adjusted.

Changes in the constitution of the Commission.

It is necessary that we should briefly state the changes that have taken place in the constitution of our body consequent upon our permanent incorporation, and the new relations which we have entered upon with Her Majesty's Government, owing to the liberal contributions made by Parliament towards the purchases of land essential for the prosecution of the scheme put forward by us. It will be seen, by reference to Appendix D., which contains the correspondence which passed between the Treasury and ourselves on the subject, at the time when it became requisite to decide upon the terms under which issues should be made out of the original Parliamentary grant of 150,000*l.* towards those purchases, that it was then arranged that, to secure unity of action over the property, the legal title to the whole should be vested in the Commissioners (to whom the lands already purchased had been conveyed), but that, for the purpose of securing to the Crown the right of general superintendence, it was agreed that the Commis-

sioners should hold the whole of the purchases (already made and to be made thereafter), subject to such directions of appropriation as should from time to time be issued by the Treasury in respect to such part, not exceeding one moiety, as should by agreement between that Board and the Royal Commissioners be set apart for such institutions connected with Science and Art as are more immediately dependent upon and supported by the Government from funds voted by Parliament; and subject also, with respect to the other part thereof, to such general superintendence by the Lords of the Treasury as might be necessary to secure that the appropriation proposed to be made, and all the arrangements in relation thereto as regards buildings to be erected thereon, should be in conformity with some general plan which should be adopted as applicable to all parts of the property, whether such buildings should be erected from public moneys or by private subscription.

On the other hand, it was understood that no buildings should be erected at the public expense on any portion of the property without first giving the Royal Commissioners opportunity of submitting to the Treasury their objections, if any should occur to them, to what might be proposed in respect to such buildings.

We should here notice that, previously to the further grant of 27,500*l.*, it was understood that it should be open to the Government, if they should think fit, to require at a future time that the outlying portions of the property (those not within the square defined by the main roads) should be profitably disposed of, and their proceeds applied to reimburse the outlay which Parliament might undertake to supply beyond the vote of 1852. (See Appendix A.)

It was further agreed, at the time of the first arrangements which we have mentioned concerning the purchases of land, that as a means of establishing and maintaining facility of communication between the Government and ourselves, we should nominate, as *ex-officio* members of the Commission, under the powers conferred upon us by our Charter of Incorporation, the following great officers of state:—the Lord President of the Council, the First Lord of the Treasury, the Chancellor of the Exchequer, the President of the Board of Trade, and the First Commissioner of Works. In

conformity with this understanding the above-mentioned Members of Her Majesty's Government were duly elected Members of the Commission on the 23d February 1853.

We have also elected Mr. Disraeli, and Sir Roderick Murchison, Director General of the Geological Survey, Members of the Commission since the date of our last Report, in pursuance of the powers which our Charter confers upon us.

Formation of Department of Science and Art.

It is obvious that, while the permanent success of a scheme so comprehensive as the one put forward in our Second Report for the promotion of Art and Science in their relations to Productive Industry, must be mainly dependent upon the support which it receives from the public at large, the co-operation of Government and of Parliament is also indispensably necessary, more especially in the first instance; and it is therefore highly satisfactory to us to record the vigorous measures that have been taken by Her Majesty's Government in this direction since the date of our last Report, by entirely reorganizing and bringing into one department many of the already-existing and isolated Institutions which fell within the scope of the subjects above indicated, and by supplying the deficiencies which presented themselves in them.

It will be of course distinctly understood that in recording the particulars set forth in this Report, as to the progress made in advancing the interests of Science and Art, whether by the Government or by private Bodies, we do not do so for the purpose of claiming the merit of what has been done by others, but are only continuing down to the present time the history of that progress as commenced in our Second Report, in order that the whole subject may be presented in a convenient shape, and a correct judgment formed as to our own transactions and their connection with those of other Bodies.

In our last Report we briefly referred to the various Institutions connected with Science and Art that were supported by the public funds, especially the School of Design, then recently converted into the Department of Practical Art, and the Museum of Practical Geology and its associated School of Mines, and we pointed out the advantage that would result from bringing them into closer connec-

tion with each other instead of their being placed under different departments of the Government. Shortly afterwards the first Lord of the Treasury requested the Board of Trade to consider the best means of carrying into effect, so far as that Department was concerned, that announcement contained in Her Majesty's speech, at the commencement of the Session of 1852-3, on the subject of the advancement of the Fine Arts and of Practical Science, which has been already quoted in this Report. The result of the inquiries instituted accordingly by the Board of Trade, is to be found embodied in the letter addressed by that Department to the Treasury on the 16th March 1853, which is contained in Appendix E., together with the Treasury minute giving effect to the arrangements therein proposed.

Correspondence between Board of Trade and Treasury.

This important letter, which led immediately to the establishment of the existing Department of Science and Art, adopted as its leading principles those of extending to local Institutions for Practical Science, a system of encouragement similar to that already commenced in the Department of Practical Art, of combining the systems on an enlarged scale, and of furnishing, through the instrumentality of one Department in connection with the Executive Government, having the support and being subject to the control of Parliament, the means for mutual co-operation and correspondence to every district of the Kingdom where the local intelligence and energy of the inhabitants might create schools of Industrial Science and Art. The Board of Trade expressed their opinion that the consideration of the question of systematically applying scientific and artistic instruction to the industrial classes of this country could no longer be delayed, and instanced our Second Report as the most recent and forcible exponent of the public wants in that direction.

They accordingly proposed to combine in one Department, under the Board of Trade, the Department of Practical Art, including the Provincial Schools of Design (then amounting to about twenty in number), the Government Institutions established in Jermyn Street (comprising the Geological Survey of the United Kingdom, the School of Mines, and the Museum of Practical Geology), the Museum of Irish Industry, and the Royal Dublin Society, all of which were supported by Parliamentary grants to the extent of

more than 40,000*l.* per annum. A Metropolitan Establishment was to be formed, where a collection should be made of the most perfect models and illustrations in Science and Art, which should be accessible not only to the pupils resident in the metropolis and to students sent up from the provincial schools, but also to the public at large. With this establishment there would also be connected a school of the highest class in Science and Art for the instruction of students and the education of teachers for the local institutions. The fees derived from pupils would be applied towards the expenses of the establishment, which, although partly supported by funds voted by Parliament, was not to be regarded as an attempt on the part of the State to impose its own views of Science and Art upon the country at large, but rather as a healthy and perpetually progressive exhibition of the state of advancing knowledge. It was shown that the systematic combination of all the provincial institutions, through the instrumentality of the metropolitan branch, would cause the improvement of one school to be made known immediately to all, the utmost opportunity for constant progress being thereby afforded to the general body, at the same time that an honorable rivalry would be generated throughout all the separate sections of the system. From the union of these different causes the greatest industrial benefit was expected to result.

The Lords of the Treasury having announced their entire approval of the scheme thus submitted by the Board of Trade, the present Department of Science and Art was formally constituted, and the Museum of Practical Geology, the School of Mines, the Geological Survey, the Museum of Irish Industry, and the Royal Dublin Society transferred from the Office of Works to the Board of Trade. Her Majesty having previously been pleased to allow the Department of Art to occupy apartments temporarily in Marlborough House, was further graciously pleased to authorize a similar temporary use of apartments there for the purposes of the increased duties of the Department.

Constitution of new Department.

Under the arrangement originally made, two secretaries were appointed for the conduct of the business of the new Department, one for the Department of Art, and the other for that of Science. Mr. Cole, who had previously filled the office of General Superin-

tendent in the Department of Practical Art, was naturally appointed to the former post, while for the latter the valuable services of Dr. Playfair (the Special Commissioner in charge of the Juries at the Exhibition of 1851) were secured. This division of duties was, however, subsequently found to be very inconvenient in practice, as the Department could not be worked properly in separated divisions, or otherwise than in an united state, and accordingly at the commencement of last year Mr. Cole was appointed Inspector General, and Dr. Playfair Secretary to the united Department. Under this arrangement the former became Inspector of all the Museums and Exhibitions of the Department and of the Schools, the Director of the Museum of Practical Geology in Jermyn Street continuing however directly responsible to the Department for the management of that Museum and the Schools attached to it, comprising the three Institutions already mentioned, and together known by the name of the Metropolitan School of Science applied to Mining and the Arts.

College of Chemistry incorporated with Department.

We may take this opportunity of mentioning that the Royal College of Chemistry (to which we made special reference in our Second Report as a meritorious but isolated establishment, prevented by its want of connection with other Institutions from producing all the benefits anticipated by its founders) was incorporated with the School of Science in July 1853, its Professor, Dr. Hofmann, being appointed Professor of Chemistry at the School. A detailed account of the reasons which induced the Council of the College to solicit this incorporation, and to place their premises, laboratory, &c., valued at 3,000*l*., at the disposal of the Government, will be found in Appendix F.

While the section of Science in the new Department is one of fresh creation, that of Art mainly differs from the School of Design previously existing under the old system in the wide extension of elementary teaching of art in parochial and other Schools, acting in concert with the Committee of Council on Education; in encouraging the formation of local Museums; and in the establishment of self-supporting local Schools, instead of leaving them, as heretofore, dependent upon Parliamentary grants of considerable amount. These objects have been realized with complete success.

Upwards of 775 parochial Schools have been assisted in procuring examples of art, materials, &c., the Department paying half the cost; and elementary drawing is now being taught in more than 200 parochial and other public Schools. Forty-two self-supporting Schools of Art have already been formed in the provinces; while the same principle has been introduced in the case of the twenty schools hitherto subsidized by the Government.

Central School and Museums of Art and Science.

The Central School of Art now at Marlborough House has become a strictly national rather than a merely metropolitan institution as formerly. It is the training school for masters and teachers in the provincial art schools, with classes also for schoolmasters, to enable them to teach drawing to the pupils in the schools of public instruction; and public examinations are held twice in each year, in order to grant certificates of competency to such teachers.

The Museum of Art, which was commenced so recently as 1851, (when the Treasury authorized the outlay of £5,000, for the purchase of such examples of manufacture shown at the Great Exhibition, as might be useful for the purposes of study) has already attracted the interest of the public to a remarkable extent. In addition to the articles belonging to the Museum, many valuable objects are from time to time deposited there temporarily for the benefit of the public, Her Majesty having been graciously pleased to set an example which has been liberally followed by Her subjects, in respect both of donations and loans to the collection. As many as 5,000 persons sometimes visit the Museum in a day, and the total number of visitors, which at the first year of the Museum, in 1852, was 45,632, has increased to a yearly average of 105,000. The number of valuable objects which it contains has so greatly increased, that the confined space for their display at Marlborough House is productive of great inconvenience, and must necessarily tend to retard its future development.

It should be mentioned that measures have been taken for giving the provincial population the benefit of inspecting the important Works of Art contained in the Museum as far as possible, by means of circulating through the provinces, for the purposes of exhibition and study, ambulatory collections of articles selected from the Museum. This experiment has been attended with much success.

Collections have been circulated to Birmingham, Nottingham, Leeds, Macclesfield, Norwich, Sheffield, and York, and have been visited by upwards of 65,000 persons. It is stated in another part of this Report that it is intended to exhibit in this manner the articles purchased by the Government at the sale of the Bernal Collection.

With regard to the Museum belonging to the School of Science in Jermyn Street, we find that a want of space, similar to that spoken of in the case of the Marlborough House Museum, exists. The Report of the Committee appointed by the Treasury to inquire into the Department of Science and Art contains the following passage:—

"The Museum itself cannot properly be developed in all its parts for want of space. The premises were constructed for the limited object of a Museum of Geology applied to the Arts; and if the Institution is to become a General College of Science, a Museum of much greater extent will be required. A varied collection of this kind could not be accommodated in the present building, and much care will therefore be necessary in selecting only such specimens as are the most indispensable. It may be hoped that when the plans of the Royal Commissioners for the Exhibition of 1851 are carried into effect, full provision will be made for the Museums both of Science and Art." (Reports on Public Offices, p. 181).

The number of visitors to the Jermyn Street Museum was 13,055 in 1855; but the building having recently been opened to the public on five days of the week, the number has greatly augmented, as many as 2,500 visitors per month having been registered.

Provincial Schools of Science.

As respects the division of Science generally, the extended development of which must of course be expected to be less marked in the first instance than that of the older Department of Art, there seems every reason to hope that the system that has been so successful in the case of the local Schools of Art, will be eventually equally successful in that of the local Schools of Science. The great difficulty at present opposed to their establishment is less the want of demand for them on the part of the country, than the want of duly qualified teachers to undertake the instruction—a deficiency

which it will take a considerable time to supply. Such schools of a general character have been established at Edinburgh, Birmingham, Aberdeen, Stoke, &c., while schools, having special reference to Mining, have either been established, or are in process of formation, in important localities like Newcastle, Truro, and Swansea. Trade schools for more elementary instruction in the principles of Science are also being formed, of which may be specified those at Bristol, Wandsworth, Newcastle, &c. As an illustration of the manner in which these latter schools are conducted, we give, in Appendix G., the prospectus of the Newcastle Trade School. Special schools for the instruction of seamen in the sciences bearing on their occupations have likewise been established in London, Liverpool, Hull, Sunderland, and Leith, and are likely soon to extend to the chief outports of the kingdom.

Birmingham and Midland Institute.

The Birmingham and Midland Institute, which promises to become an important local Institution for the promotion of Science, was originated in the year 1853, when the Committee appointed to organize it entered into correspondence with us for the purpose of ascertaining how far, in our opinion, the proposed plan fulfilled the essential requirements of an industrial Institute. This correspondence is given in Appendix H., which also contains the prospectus subsequently issued to the public by the Committee, and a series of resolutions passed at a meeting held to organize an Artizans' movement in aid of the Institute.

The scheme put forward by the promoters of the Institute was very favourably received, and large sums of money were subscribed towards its establishment, at the same time that the Corporation of Birmingham made a grant of a valuable site on which to erect it, under the authority of an Act of Parliament passed in 1854, for the incorporation of the Institute. This Act provides that the Institute shall be divided into two departments, entitled the General and the Industrial Departments respectively, the former comprising Reading and News-rooms, Libraries, Museums, a Fine Arts Gallery, Collection of Mining Records, &c. and Lectures and Meetings for the discussion of the higher branches of knowledge; whilst the Industrial Department is to embrace classes for elementary and

progressive Instruction in Mathematics and Practical Science, &c., together with Laboratories, Models, Philosophical Apparatus, &c. The grant of land for the site was made contingent on the sum of not less than 10,000*l.* having been contributed and paid for the purposes of the Institute.

All the necessary preliminary steps having been taken, and the necessary funds secured, the first stone of the Institute was laid by His Royal Highness Prince Albert, on the 22nd November last, in the presence of a large assemblage of persons. We have appended to the last-mentioned Appendix H. the address read to His Royal Highness, by the Council of the Institute, together with a speech made by His Royal Highness at a subsequent period of the day. The same Appendix also contains a speech delivered by Lord Ashburton on the occasion, in which he points out the importance of the Institute, and the great danger to the manufacturing interests of this country, in respect of the maintenance by them of their superiority in the workshops of the world, that may be apprehended from a neglect of the means offered by this and similar institutions for the promotion of Industrial Science, and the study by the industrial classes of the processes and scientific principles on which their avocations depend.

The Birmingham and Midland Institute being the first local institution that has been founded by the independent action of the public for the purpose of carrying into practical effect, on a comprehensive scale, the principles which form the leading feature of our Second Report, we shall naturally watch with much interest its future growth and development.

Lectures to Working Men.

In the Metropolitan School of Science, (the Government Institution in Jermyn Street,) in addition to the ordinary systematic courses of lectures on the technical subjects taught in the school, and similar courses for school-masters, a very successful experiment has been made in the establishment of series of lectures addressed exclusively to working men. The inadequacy of the space to accommodate the very numerous and eager applicants for admission to these courses (for which a fee of 6*d.* per course is charged), and the interest invariably evinced by those who succeed

in securing tickets, afford convincing proof that this excellent feature in the arrangements connected with the school is susceptible of great development, and that all that is necessary for the purpose is to obtain adequate accommodation.

Loan of Gore House to new Department.

With the view of giving any facilities in our power to the new Department of Science and Art, we placed Gore House (the rental of which is valued at from 600*l.* to 800*l.* per annum), at its disposal in 1853, and since that period it has continued to occupy it. In addition to the establishment there of a Branch District School, in connection with the Central School at Marlborough House, it has been employed for the periodical exhibition of the works produced by the students from the schools of the whole country, one exhibition being each year devoted to the more advanced works, and one to those of a more elementary character. It has also served as the workshop for making photographs, electrotypes and casts for distribution to local schools, and afforded facilities for teaching a limited number of Sappers and Miners photography, to be employed in the Ordnance Service. A valuable collection of furniture and cabinet work was also exhibited at Gore House in 1853, and visited by 13,500 persons, all of whom paid for admission, except those admitted at the private view.

Irish Branches of Department.

As respects the Irish Establishments connected with the Department of Science and Art, viz., the Museum of Irish Industry and the Royal Dublin Society, highly satisfactory results continue to be exhibited. In the case of the Museum of Industry, the experiment of opening it at night for the benefit of the working classes, has been remarkably successful, and suggests the expediency of considering whether a similar plan of evening exhibition might not be advantageously adopted in the metropolis. In 1854, the number of day visitors amounted to 16,344, and those at night to 7,800; while in 1855 the number of day and evening visitors were 14,416 and 10,592 respectively.

To prevent unnecessary outlay in the formation of duplicate collections in this Museum and the Museum of the Royal Dublin Society, it has been arranged that the former shall be confined to "the illustrations required by a technological Museum having reference to the Industrial Arts, and to such collections as may arise

during the progress of the Geological Survey with which it is connected," and that purchases for the latter shall include only " such objects as may be necessary for a Museum of Natural History, including Botany, Geology, and Mineralogy, viewed in their scientific but not in their technological relations, and also for a Museum of Agriculture."

The superintendence of the educational staff attached to the Royal Dublin Society and paid for by Parliamentary grants was at the same time entrusted to the Department of Science and Art.

Edinburgh Museum of Industry.

As respects Scotland, the necessary steps were taken in 1854, for the formation in Edinburgh of a National Museum of Industry, corresponding to those established in London and Dublin. The sum of 7000*l.* was voted by Parliament for the purchase of an appropriate site, and the museum at the University of Edinburgh, belonging to the Town Council and the University, has been transferred by them to the Crown, while the Highland Society have presented their valuable collection of models and ores, by which means the nucleus of the proposed Industrial Museum has been obtained, in both its scientific and technical departments. It is understood that everything is progressing favourably towards the development of the museum on its permanent basis.

In the Natural History Museum in Edinburgh which was brought under the Department in 1854, the experiment has been recently tried of charging low entrance fees and of opening the museum one day in each week free of charge, and the result of the new system introduced by the Department has been that from 8th October 1855 to 23rd February 1856, the attendance has been 100,947 in comparison with 833 in the corresponding period of 1854–55.

Transfer of Department to Education Department of Privy Council.

Her Majesty has been pleased, by Order in Council, dated the 25th February last, on the recommendation of the Lords of the Council, to direct the transfer of the entire management and control of the Department of Science and Art from the Board of Trade to the Committee of Privy Council on Education, an arrangement, however, by which no alteration in the general position of the Department, as respects the public, is made.

Removal to Kensington Gore estate.

In consequence of the approach of the time when it will be necessary, under the provisions of the Act 13 & 14 Vict. c. 78, to give up the temporary occupation of Marlborough House, hitherto graciously authorized by Her Majesty, it has been requisite to consider the best means of making provision for the accommodation of the Department elsewhere. The facilities offered by our estate for the purpose, and the fact of the erection thereon of the Museum building, referred to more particularly in another part of this Report, pointed naturally to the removal of the Department to the Kensington Gore estate, and it is satisfactory to us to state, that arrangements are now under the consideration of Her Majesty's Government to that end, which we have offered to promote as far as lies in our power, by placing at the disposal of the Department several of the houses on the estate (such houses now producing a rental of more than 300*l.* a year).

National Gallery.

It will be remembered that we referred briefly, in our Second Report, to the question of the apportionment of the ground amongst the different institutions to be erected on it, as being one that must be left for future consideration and arrangement (p. 39). We, however, made a suggestion, that the new National Gallery, if placed in this locality, should occupy the northern and more elevated site, fronting Hyde Park.

Report of Select Committee.

Shortly after the presentation of this Report,—viz., in March, 1853,—a Select Committee was appointed by the House of Commons "to inquire into the management of the National Gallery; also to consider in what mode the collective Monuments of Antiquity and Fine Arts possessed by the Nation may be most securely preserved, judiciously augmented, and advantageously exhibited to the Public." This Committee consisted of Colonel Mure (Chairman), Mr. Labouchere, Lord Elcho, Mr. Stirling, Mr. Raikes Currie, Mr. Monckton Milnes, Mr. Marshall, Lord Seymour, Mr. Vernon, Lord Brooke, Mr. Goulburn, Mr. Ewart, Mr. Baring Wall, Sir William Molesworth, Mr. Hardinge, Lord William Graham, and Mr. Hamilton; and their inquiries extended over a period of between three and four months, embracing amongst other subjects those of the site of the National Gallery, and the

expediency of combining the national collections of Monumental Antiquity and Fine Art in one building or group of buildings. For the evidence given in favour of the Kensington Gore site we would refer to Appendix I., containing extracts from the minutes of evidence taken before the Committee.

The conclusions arrived at by the Committee on the above subjects may be best given in their own words:—Resolved, "That the site of the present National Gallery is not well adapted for the construction of a new Gallery." (This resolution was arrived at by a majority of 10 votes to 1, the late Mr. Baring Wall being the only dissentient),—"That the estate at Kensington Gore, purchased by the Royal Commissioners of the Exhibition of 1851, and by them offered to the Nation, presents many of the advantages recommended by the witnesses before your Committee. The position which has been suggested, at the extremity of Kensington Gardens, would afford a better guarantee for the future protection of the Works of Art there collected, from the evils incident to a crowded neighbourhood, and would improve the opportunity of erecting an edifice worthy of the purpose; but Your Committee are fully aware that the acquisition of such a site is attended with difficulties they see no adequate means of removing; and in consequence, they are prepared to recommend the acceptance of the offer of the Commissioners.

"That the Committee are of opinion that the question of combining the various artistic and archæological collections in the British Museum with the National Gallery be referred to a Royal Commission.

"That no time should be lost in obtaining the decision upon the above question, in order that the new National Gallery should be commenced with all convenient speed." (Report, page 15.)

The Committee further discuss at some length, at the conclusion of their Report, the merits of several proposed sites for the new National Gallery, and the Report concludes with a reiteration of the recommendation to accept the offer made by us of a site on the Kensington Gore estate.

It may here be observed that the whole of these alternative sites were in the immediate neighbourhood of our estate, either in

Kensington Gardens or adjoining them; so that whatever difference of opinion existed as to particular *sites*, none whatever existed as to *locality*.

The immediate prosecution of this scheme has, we presume, been temporarily interrupted by the peculiar position of public affairs.

The Royal Commission which the Committee recommended should be appointed to consider the question of "combining the artistic and archæological collections in the British Museum with the National Gallery" has not yet been so appointed.

Change in management of National Gallery.

One important step has however been taken by Her Majesty's Government towards the introduction of an improved permanent system of management in the National Gallery, in conformity with the recommendations of the Committee of 1853, by placing it under the general control, (subject to the supervision of the Board of Trustees,) of a responsible and salaried Director. A "Keeper and Secretary," has also been appointed, together with a Travelling Agent to assist in the purchase of pictures abroad. It is also proposed to apply to Parliament for an annual sum for the purchase of such pictures as it may be deemed desirable to secure.

The Treasury Minute thus re-constituting the establishment of the National Gallery is given in Appendix K.

Turner bequest.

It will not be inappropriate to notice, in this place, the bequest made to the nation by the late Mr. Turner, of his valuable collection of Paintings. During the law proceedings respecting the validity of this bequest, those paintings have been temporarily deposited in three unoccupied rooms in the basement of the National Gallery. By a recent decision of the Court of Chancery, they are now the property of the nation, and, as soon as the legal formalities permit, it would be desirable on many accounts that they should be properly exhibited; but we understand that at present there is no place adapted for the purpose where sufficient room could be provided.

National Portrait Gallery.

The question of the formation of a National Gallery of Portraits of distinguished persons, in connexion with the National Gallery, has of late attracted considerable attention, and the House of Lords, on the motion of Earl Stanhope, passed an unanimous Address to the Crown, on the 5th March last, "praying that Her Majesty will be

graciously pleased to take into Her Royal consideration the expediency of forming a Gallery of the Portraits of the most eminent persons in British History."

It has been suggested that, with a view to the due consideration of the means of carrying into execution on a permanent basis so desirable an object, great advantage would result from making a temporary Exhibition of National Historical Portraits, as a preliminary measure. A large number of such Portraits would doubtless be readily lent for the purpose by their proprietors. As a means of realizing this valuable suggestion, we would observe that the Museum now in course of erection on the Kensington Gore Estate, and hereafter spoken of, would afford every facility for exhibiting, for as long a period as may be desired, the Collection of Portraits thus formed, without in any way interfering with the Exhibition of the other Collections intended to be there displayed.

Animal Produce Museum.

We made allusion in our Second Report to the fact, that although the Mineral and Vegetable Kingdoms of the great class of Raw Materials were represented in the Government Museum of Practical Geology in Jermyn Street, and the Museum of Vegetable Products at Kew, the important branch of Animal Produce was virtually entirely unrepresented in this country, and we pointed out that the establishment of such a Museum was much needed, and was likely to be productive of much advantage to our manufacturing interests.

Since the period in question, most satisfactory progress has been made in the further development of the two existing Museums above-mentioned. The former as a branch of the Science and Art Department of the Board of Trade, under the able superintendence, first, of the late Sir Henry De la Beche, and more recently, of Sir Roderick Murchison, have been already referred to, in connection with our observations respecting that Department; while gratifying proofs of the success and practical utility of the latter (now known as the Museum of Practical or Economic Botany) are adduced by Sir William Hooker, in the Reports on Kew Gardens annually laid before Parliament.

Formation of Animal Produce Museum by Society of Arts and Commission.

It affords us much satisfaction to state, as respects the Animal Produce Museum, that the deficiency complained of is now being supplied, the Society of Arts having, in conjunction with ourselves, undertaken the task of originating such a Museum. Shortly after the publication of our Second Report, we received a letter from the Society, in which they proposed to undertake the formation of this Museum, and to devote the sum of 400*l.* towards it, to be expended in the course of the two following years, provided we would agree to contribute a similar sum towards the same object, to which proposal we assented, and, with our joint concurrence, Professor Edward Solly, late Secretary to the Society (who had previously been of great assistance to us in connection with the Great Exhibition, where he filled the office of Juror and Reporter) was appointed to superintend for a period of two years, ending with July 1855, the formation of the animal branch of a general collection of the Raw Produce and Manufactures of all countries, as set forth in our Second Report.

The important and responsible duty thus undertaken by Professor Solly, has been discharged by him with great zeal and success, and on the 23rd May last year, the collection formed by him was opened for public exhibition in the rooms of the Society, and during the time that it remained open, afforded much interest and useful information to those who visited it.

Transfer of Museum to Commission.

This collection having been formed under the joint authority and at the joint expense of the Society and ourselves, the question of its ultimate disposal and ownership has naturally required decision, and in July last the Society acquainted us that they were prepared to transfer the whole of the collection to us, as its sole proprietors, on condition of our reimbursing them the whole of the outlay that they had incurred in connection with it, and engaging to provide a place for its reception and arrangement with a view to exhibition, and its continuance as a permanent and advancing collection.

Parliament having just sanctioned the vote of 15,000*l.* for the erection on the Kensington Gore estate of the building that we have elsewhere referred to, we were in a position to give our assent to the second of the conditions just mentioned, as to the permanent exhibition of the collection, especially as the necessity of our so

doing had been particularly adverted to by us in making our application for the Parliamentary grant, and had been remarked upon in Parliament as one reason, amongst others, in favour of the vote. As respects the first of the conditions, relating to the expense connected with the formation of the Museum, we thought it right, under the circumstances of the case, to undertake to reimburse the Society its original outlay, which proved to have amounted to 529*l.* 5*s.* 9*d.** (in addition to the sum of 400*l.* already defrayed by ourselves, under the terms of our original agreement with the Society.)

The correspondence that has passed between the Society and ourselves on the subject of the Museum will be found in Appendix L.

The collection that has been formed remains temporarily stowed away on the Society's premises, until the completion this summer of the Museum building admits of its removal to Kensington Gore.

Opinion of Society of Arts as to Trade Museum.

The Society of Arts having favoured us with an expression of their matured views, as to the "principles upon which a Trade Museum worthy of the vast trade and enormous commerce of this country and its colonies ought to be developed," this appears to be the appropriate place for introducing them, which we accordingly do in their own words:—

"The Council believe, that to form a Museum of Animal Produce alone would be of comparatively little use. A Trade Museum ought to contain Animal, Mineral, and Vegetable products, specially classified, with a view to their commercial usage and technical instruction. It would in no way accomplish this object were other Museums of Vegetable and Mineral produce already in existence, to be brought into juxtaposition with the Animal collection. The three collections thus combined would not constitute a Trade Museum. The principles of arrangement and classification of a collection of Minerals, for example, in a Museum designed for Educational or Scientific purposes, are quite different from those under which the same collection would be distributed in a Trade Museum designed for commercial reference, technical teaching, and the requirements of Trade."

* A sum of 190*l.* 13*s.* 4*d.* has to be added to this amount for the expense of cases and fittings for the collection provided by Professor Solly.

The above observations, proceeding from a body so well qualified as the Society of Arts to form a sound judgment on such a subject, appear to us, without now expressing an opinion ourselves on the subject, deserving of careful consideration. It will be seen that if these suggestions are carried into effect, it will be necessary to lay the foundations of two distinct branches of the Museum of Animal, Vegetable, and Mineral produce, which, even if consisting of the same articles, would be arranged in entirely different ways, according as they are destined for the practical use of the mercantile community, or for purposes of Science and Education.

Major Owen's Memorandum.

As the question of the establishment of a General Museum of Manufactures, whether divided in the manner above indicated or not, is one of great importance, we append a memorandum upon the subject, prepared by Captain (now Major) Owen, R.E., late Financial Officer to the Commission, urging that the arrangements to be adopted should follow those which already exist in the commercial arrangements of the industrious part of the nation visiting the Museum, giving, for instance, a "Pottery Department for Potters, and a Calico Printing section of a great Cotton class for Calico Printers, comprising in each case the raw materials, the machinery necessary for its production, and illustrations of what has been and is produced in each Department most worthy of study or observation, whether in an artistic, scientific, or commercial point of view." (See Appendix M.)

Museum of Inventions.

Our Second Report contained the following paragraph:—"In the recent discussions on the subject of the Patent Laws, constant reference was made to the want of a building in which models and plans of inventions might be deposited, for the advantage of the inventor and the information of the public." (page 25.) And again:—"The admirable effects produced by well-arranged collections of Models of Machinery, and especially of new inventions are shown by the public importance attached to the 'Conservatoire des Arts et Métiers' in Paris, and similar institutions in other parts of Europe. The great attention paid by the public to the department of the Exhibition (of 1851) devoted to Machinery, indicated how eagerly such facilities for acquiring knowledge were used.

Further evidence of the fact is seen in the desire, already alluded to, that was expressed by inventors in the late discussions on the Patent Laws, to obtain a place where models of recent inventions could be deposited. It is well known that there are numerous valuable models existing in this country, which it would require little effort to obtain, if suitable accommodation could be provided for their display and useful illustration. If means were offered for exhibiting and testing new machines, under scientific superintendence, we have reason, from the experience of the Exhibition, to believe that they would be largely taken advantage of; and it cannot be doubted that such means, used for the purposes of instruction and with the co-operation of our eminent Civil Engineers and of the Scientific Societies, would soon give a new impetus to Invention." (Page 29.)

Memorials for establishment of Patent Museum.

Shortly after the publication of this Report, strong confirmatory evidence of the correctness of the above observations was furnished, in the shape of Memorials, addressed to us by the Chambers of Commerce and influential inhabitants of several of the chief seats of manufacturing industry, such as Manchester, Sheffield, Glasgow, Leeds, and Bradford, praying (in the words of the Manchester Memorial) for the establishment of a "Library and Museum in connexion with the Patent Office, wherein authentic information may be obtained of all published inventions, ancient and modern, in every civilized country of the globe, and which may also contain indexes to the published works, so arranged that ready reference may be obtained to any invention."

On the receipt of these Memorials a Committee was appointed by us, consisting of Lord Granville, Mr. Disraeli, Mr. Labouchere, Mr. Cardwell, Sir William Cubitt, Mr. T. F. Gibson, the late Professor Forbes, Dr. Playfair, and Professor Woodcroft, Superintendent of Patent Specifications, to consider the best mode of aiding in establishing a Museum of Inventions of the nature indicated. This Committee summed up the conclusions to which they arrived in a Report which we approved, and the recommendations contained in which we adopted. The importance of the subject induces us to give this Report *in extenso*, as follows:—

Report of Committee.

"The Committee beg to report, that they have proceeded to take into consideration the question referred to them by the Commission,

and that the result of their inquiries has been to impress them with the important bearing which the establishment of a Museum of Inventions, such as that indicated in the Memorials on the subject that have been received by the Commission, is calculated to have upon the interests of Science and of Commerce. They are of opinion that, for the purpose of rendering such a Museum of the greatest amount of benefit, it should not be confined to a mere collection of Machines and Models, but should embrace as complete a Library as possible of all scientific and other works relating to Inventions, accompanied by a complete set, in a printed form, of the Specifications of all Patents that are delivered in to the Commissioners of Patents, in pursuance of the Patent Law Amendment Act of 1852.

"The Committee have been given to understand that the Commissioners are taking measures for the systematic collections of Models, such as those above referred to; and they beg to recommend that the Patent Commissioners should be requested to continue their exertions in this respect, and to provide temporary accommodation in the offices at their disposal for as many models as can be deposited there; that when further accommodation is found necessary, the Royal Commission should undertake to give as much stowage room as possible for the purpose in the unoccupied premises belonging to them on their estates at Kensington; and that in case the space so provided should still prove to be insufficient, application should be made to the Government for the grant of a place of deposit either at Kensington or elsewhere.

"The Committee beg, in conclusion, to report that they have postponed the consideration of the question of the building in which the display of the collection should afterwards be made, and of the means of erecting such a building, until further progress is made in determining upon the building arrangements to be adopted on the Commissioners' property generally."

In accordance with the above recommendations, Professor Woodcroft has been zealously engaged in forming the nucleus of a National Collection of Models of Inventions, and a large number of valuable articles have been collected by him. We have, moreover, reason to believe that when a proper place for their adequate exhibition is provided, no difficulty will be found in obtaining a

collection of such models to any extent required. But in the meantime the absence of any means of exhibiting them to the public obviously prevents any practical use being made of even the models now in the hands of the Patent Commissioners. Accordingly, in the application made by us last year, and hereafter referred to, for the grant of a vote of 15,000*l.* for the erection on the Kensington Gore estate of a suitable place for the deposit and exhibition of various public collections, &c., we particularly specified the case of the collection in question as an argument in support of it. That vote having been obtained, and the Museum proposed by us being in course of erection, we trust that at an early period a commencement may be made, whereby the desired object of a permanent exhibition of a constantly extending Museum of Inventions will be attained.

Models deposited in Kensington Palace.

In the meantime we have, at the request of Professor Woodcroft, taken charge of a considerable number of valuable models in the apartments at present occupied by us in Kensington Palace, from whence they will be removed to the new building on its completion.

Educational Museum.

The importance of establishing a permanent Museum of Education in this country, with the view of introducing improvements in the existing methods of instruction, and specially directing public attention in a practical manner to the question of National Education, has been of late generally recognized, and in the year 1854 an attempt was made, through the zealous instrumentality of the Society of Arts, to enlist the direct sympathy of the public in the subject by means of a temporary Educational Exhibition held in St. Martin's Hall. The interest which this Exhibition excited, and the regret expressed by so many of those who visited it that the circumstances under which it was held prevented its being permanently continued, induced the Society of Arts to consider whether it might not be made the foundation of a National Educational Museum.

They accordingly submitted a proposal to Her Majesty's Government to the effect that they were prepared to hand over to them such portions of the Exhibition as were the property of the Society, and to use their influence to procure for the Government such of the remainder as it might be desirable to secure, on condition that the

Government would in return undertake to provide for the immediate safe custody of the collection so formed, and for its subsequent arrangement and exhibition as a permanent Museum, to be kept up and added to from time to time.

Nucleus of permanent Museum presented to Government and deposited at Kensington Gore.

The above conditions meeting with the approval of the Government, a favourable reply was returned to the proposal of the Society of Arts, and a valuable nucleus secured accordingly for the contemplated permanent Museum. As, however, no means existed at the time for providing for the immediate exhibition and development of the collection, an application was addressed to us, at the suggestion of the Treasury, by the Lords of the Committee of Council on Education (in whose department the Museum would naturally be ultimately vested) to furnish a place on the Kensington Gore estate for the temporary reception of the articles, until means could be found for their eventual exhibition to the public. It afforded us much pleasure to provide the accommodation sought for; and the collection consequently remains deposited at Grove House, until the completion of the new building now being erected admits of its proper display and progressive development.

Further particulars on the subject of the Educational Museum will be found in the memorandum prepared by the Society of Arts, that forms one of the enclosures to our letter to the Chancellor of the Exchequer of the 30th June last, respecting that building, which is given in Appendix T., and which is more particularly referred to elsewhere.

Museum of Domestic Economy.

Amongst the sections of the recent Exhibition at Paris which excited peculiar interest, was one which was only opened at an advanced period of the Exhibition, viz., that known as the "Gallery of Domestic Economy." This gallery, the establishment of which was mainly owing to the exertions of Mr. Twining, a Member of the Society of Arts, had particularly in view the exhibition of those useful or necessary articles, which from their cheapness, appropriateness, and good workmanship are calculated to diffuse comfort in the dwellings of the humbler classes of the community, and tend to promote their physical well-being and intellectual development. Although the short time available for the prepara-

tion of this branch of the Exhibition necessarily rendered it somewhat imperfect, it still embraced a great variety of articles, and sufficed to show how valuable it might become when rendered complete and made to assume a more permanent character. The Emperor of the French has accordingly ordered steps to be taken for the foundation of a permanent Museum of Domestic Economy in France, based upon the principles above indicated; and we have been applied to for the purpose of ascertaining how far we might be disposed to give facilities on the Kensington Gore estate for the establishment of a similar Museum in England in connection with the general scheme that has been put forward by us. Pending the adoption of any decision on this subject, we have only to express our sympathy with an object calculated, if carried out with due care, and confined within proper limits, to benefit the poorer classes, and improve their social condition.

Architectural Museum.

We referred in our Second Report to the want of means of imparting instruction in Architecture, and to the absence of any museum or collection in the metropolis illustrative of that important division of the Fine Arts. It is satisfactory to us to be able to state that, very shortly after the publication of that Report, vigorous measures were taken to provide a remedy for the deficiency in question, and that they have resulted in the establishment of an Architectural Museum, which has for some time been open for exhibition in Cannon Row, and where Lectures on subjects connected with Architecture are periodically delivered. The interest excited by this museum, and the success that has attended it, notwithstanding its recent formation, lead to the hope that it may expand to wider dimensions, and serve as the nucleus of a complete national collection of Architecture in all its branches. It already embraces a collection of many thousand specimens, and appears to be supported by the most eminent men in the profession.

It is understood that the limited space afforded by the rooms in Cannon Row tends to impede the development of the collection, and that a more extensive site would be of great advantage to it. Should it appear that the means at our disposal could in this respect be

made of assistance to the promoters of this Museum, we shall be happy to afford them such facilities as may be in our power.

Bernal Collection.

The sale in the spring of last year of the remarkable collection of Works of Art between the Byzantine period and that of Louis XVI., belonging to the late Mr. Bernal, and known generally by the name of the "Bernal Collection," appeared to us to offer a favourable opportunity for securing for the nation valuable additions to the works of Art already possessed by it. We accordingly brought the subject under the notice of the Treasury, proposing the outlay of a sum, amounting in the whole to about 16,000*l.*, in making purchases on the occasion of the sale, the articles to be purchased being confined within the following categories :—

(1.) Suggestive of improvements in Manufactures.

(2.) Beauty and excellence of style or decorative work and skilful workmanship.

(3.) Illustrative of technical processes in art and science.

(4.) Interesting as historic specimens of manufacture and ornament.

A marked catalogue specifying the above classes of articles, and the prices which it might be expedient to bid in each instance, which had been carefully prepared at our request by the Inspector General and the Art Superintendent of the Department of Science and Art, was also transmitted by us to the Treasury.

We at the same time urged, that the collection which might be formed in this manner, should be exhibited as soon as possible to the public, in the metropolis, and the principal seats of manufacture in the provinces.

Purchases by Department of Science and Art.

To this application a favourable reply was returned, to the effect, that the Lords of the Treasury were pleased to sanction the outlay of a sum not exceeding 12,000*l.* in making purchases at the sale, as proposed by us, upon condition that the articles selected should be of "utility as specimens worthy of imitation in shape, style, colour, &c. by our manufacturers," and serve to "encourage good taste and general improvement."

In conformity with the permission thus given, an agent on behalf of the Government attended the sale, which lasted for 32

days in March and April 1855, and succeeded in obtaining 725 lots out of a total number of 4,294, at a cost (exclusive of commission) of 8,283*l.* 18*s.* 6*d.*, the total sale realizing the enormous sum of 62,690*l.* 18*s.* 2*d.* Other purchases to a considerable extent are understood to have been made on account of the British Museum. It will be seen that the above sum is considerably below that authorized to be expended; but this result is understood to have been owing to the operation of a rule laid down by the Treasury, that in no case should a higher price be given for any article than that marked in the catalogue laid before them.

The correspondence that passed between the Lords of the Treasury and ourselves on the subject of these purchases is given in Appendix N.

The collection that has been thus acquired is of an interesting and valuable character, embracing numerous specimens in each of the following subjects:—

Oriental, Dresden, Sévres, and German Porcelain; Faenza and Palissy ware; Miniatures; Mediæval Metal work, Jewellery and Silver; Limoges Enamels; Seals, Ivories and miscellaneous curiosities; Armour and Arms; Stained Glass; Venetian and German Glass; Ancient Spoons, Knives, and Forks, Bijouterie, and Keys; Clocks and Watches; Medals; and Decorative Furniture.

Owing to the absence of facilities on the part of the Department of Science and Art for the public exhibition of this collection, it remains at present only partially arranged and shown at Marlborough House. We trust, however, that the completion in the course of the present summer of the iron museum building on our estate may enable the Government to provide for its exhibition in a manner satisfactory to the public, as contemplated by the Treasury in sanctioning the purchase, simultaneously with the numerous other collections already alluded to, and the benefits of which have hitherto been almost lost to the country.

Juxtaposition of learned Societies.

We alluded in our Second Report to the desire that had been frequently expressed by the different learned Societies of the metropolis to be placed in juxtaposition with each other, so far

as respects locality, by which means much of the pecuniary resources now expended by the Societies in their present state of isolation, in the shape of rent, &c., would be economized and made available for the direct purposes of Science, at the same time that the contiguity of their several libraries would render them available for mutual reference. The benefits that would result from such a concentration of the Societies, by bringing public attention to bear more directly upon their endeavours to promote Science and Art, were also pointed out, and we took advantage of the opportunity to mention that if the Societies in question found a difficulty in carrying out a proposal for juxtaposition so strongly and frequently urged by them, the Kensington Gore estate offered facilities for their attaining the desired end.

Although we made this observation, as shown by the context, entirely on the assumption that the learned Societies might be anxious to carry the above design into execution at an early date by the only means then available for the purpose, its purport appears to have been somewhat misunderstood by some amongst them, and the Astronomical Society did in fact address a representation to us on the subject, objecting to the adoption of a site which they considered too distant for their special purposes from the centre of the metropolis. We showed, in reply to this communication, the misconception under which the Society laboured as to the meaning of our Report, and acquainted them that it was entirely optional to themselves and any other of the Societies whether they would or would not seek for the grant of a site on the Kensington Gore estate.

At a period subsequent to the date of the above correspondence, Burlington House, Piccadilly, was purchased by the Government for the sum of 140,000*l*. It is understood that the learned Societies are in communication with the Government, for the purpose of obtaining on that site, (which is nearly midway between Somerset House, the spot in which most of them have been hitherto located, and our estate), the juxtaposition they desire. In the wish which the Societies are believed to entertain of finding accommodation in this situation, we find corroborative evidence of the correctness of the remark contained in our last Report as to the tendency of the

Scientific classes of the Metropolis to move further and further in a westerly direction.

We may take this opportunity of stating that while we shall be glad if the Societies find that the site of Burlington House provides them with all the accommodation they need, it will afford us pleasure, in the event of the portion assigned to them proving to be insufficient for all their purposes, to give them, should they desire it, any facilities in our power as respects the affording space for the reception and exhibition of their Museums, Collections, &c.

Royal Academy of Music.

A Memorial has been presented to us by the Directors of the Royal Academy of Music (see Appendix O.) applying for the grant of a site on the Kensington Gore Estate for the purpose of erecting a building suitable for the accommodation of the Academy. The objects had in view appearing to us to fall within the general scope of the scheme contemplated by us, a Committee of our number has been appointed to confer with the Directors of the Academy on the subject, but no definite decision respecting it has been arrived at, the adoption of such a decision having hitherto been deemed premature.

Exhibitions subsequent to the Exhibition of 1851.

A remarkable result of the great success that attended the Exhibition of 1851 is to be found in the numerous Exhibitions of a similar character that have been since held elsewhere, although none of them appear to have been productive of a corresponding amount of success in a merely financial point of view, however much they may have been deserving of it. Without referring particularly to merely local or national Exhibitions, or to the one held at Munich in 1854, where the productions of the whole of Germany and not simply those of Bavaria were admitted, we may mention those held at New York, Dublin, and Paris respectively, in all of which the principle of international competition, that formed the distinctive feature of the Hyde Park Exhibition, prevailed. We have presently to speak of the Paris Exhibition. The Dublin Exhibition of 1853 is especially memorable from the fact of its having been mainly due to the enterprise of one man, Mr. Dargan, who made himself responsible for the pecuniary means of carrying it into effect, and who, we regret

to have heard, became consequently a pecuniary loser, notwithstanding the interest which the Exhibition excited. The New York Exhibition, which was also held in 1853, was injuriously affected, as a commercial speculation, by the late period to which it was found necessary to postpone its opening, owing to the non-completion of the Exhibition Building. Her Majesty's Government took advantage of the occasion to appoint a Commission of Six Members to attend the Exhibition and report to them respecting it, and selected Lord Ellesmere, Sir Charles Lyell, Mr. Dilke, Mr. Wallis, Mr. Whitworth, and Professor J. Wilson, for the purpose, the whole of whom had been more or less directly associated with us in connection with the Exhibition of 1851, the first two as Members of the Royal Commission, Mr. Dilke as a Member of our Executive Committee, Mr. Wallis and Professor Wilson as Deputies attending the Juries, and Mr. Whitworth as a leading Exhibitor. The Reports that were accordingly prepared by these gentlemen were laid before Parliament in the year 1854, and will be found of much interest and value.

Industrial Instruction. Society of Arts Committee.

Shortly after the publication of our Second Report, the Society of Arts appointed a Committee to take into consideration a subject upon which we had laid considerable stress, viz.: the necessity of methodizing and extending the means of Industrial Instruction in this country; and that Committee entered into an extensive correspondence with the leading members of the different classes of the community interested in the question, for the purpose of ascertaining the views generally felt respecting it. A large and very valuable mass of evidence was in this manner collected, an abstract of which was laid before the Society in the Report of the Committee, and has been published as a separate volume, to which we would invite especial attention.*

A reference to the work in question will show that a remarkable degree of unanimity of opinion exists on this important subject amongst those who were thus consulted, consisting of leading manufacturers, managers of mechanics' institutions, heads of schools, &c.,

* Report of the Committee appointed by the Council of the Society of Arts to inquire into the subject of Industrial Instruction. Longman, 1853.

and friends of education generally, including many of the most eminent names in Science and Art, to the number of several hundreds altogether. The replies received, with scarcely an exception, express a decided opinion in favour of the object had in view.

The plan recommended by the Committee, and which is based upon the suggestions received by them, involves the establishment throughout the country of Local Schools of Science and Art in which Industrial Education may be systematically imparted, and the nucleus of which already exists to a considerable extent in the provincial schools connected with the Department of Science and Art, the Mechanics' Institutes, now so widely diffused, and other institutions, colleges, &c. of an analogous character. The whole of the local schools to be thus established should be in union with a great Central Institution in the metropolis, without which no unity of action can be obtained. It would be the duty of this Central Institution, without in any way interfering with the self-government or independent action of the provincial bodies, to correspond with, advise, and assist in organizing such local Institutions. A general system of examination for the provincial Schools should also be introduced in connection with the Central College, which should be empowered to grant certificates of proficiency, and have attached to it exhibitions or scholarships to reward those who distinguished themselves at the local examinations. It would, moreover, serve as a training school for teachers of Science so far as it bears on industrial instruction.

The Report of the Committee concludes by observing that, while a knowledge of the principles of the Sciences on which arts or trades are founded is an indispensable element in the instruction of the well-skilled workman, it must be understood that that knowledge would not in any way supersede the necessity of the pupil acquiring practical instruction in the workshop or factory. It could only lay a solid basis for that further instruction required to make him an adept; the practice of an art or the manipulations of a trade being best learned as realities and the stated occupations of every day life.

It will be seen, by comparing the recommendations thus put forward with those submitted by us in our Second Report, how entirely

they coincide with the latter in all their main features, thus affording another proof of the correctness of the views we have already expressed.

Replies to Circulars of Committee.

Appendix P. will be found to contain two of the circulars on the subject issued by the Society of Arts, together with a selection from the replies received by them. The following short extracts from the replies, however, appear to us to deserve special notice in this place, not only from the nature of the views they contain, but from the eminent position of their respective authors, and their qualifications for pronouncing an authoritative opinion.

Sir David Brewster, Chairman of Jury and Reporter at the Exhibition of 1851, and a Juror at the Paris Exhibition, "begs leave to express his warmest approbation of their (the Committee's) plan for extending Industrial Instruction over the Kingdom."

Mr. Robert Chambers of Edinburgh, says, "I cannot but express my cordial concurrence in the views of the Committee on Industrial Instruction of your Society with regard to possible improvements in education. As far as those views go they seem to me beyond dispute; for experience has certainly proved that a training in the useful Arts is an excellent means of developing the faculties of youth, while it is equally true that to found an increased technical skill upon general intellectual education would greatly promote some of the most important interests of our Country."

Mr. Charley, of Belfast, a Juror at the Exhibition of 1851, states that he "has long felt the necessity, in the Linen Manufacture of the North of Ireland, for some such step; knowing as he does the frequent loss occasioned in many of its branches by the ignorance of the persons in charge."

Mr. Sands Cox, of Queen's College, Birmingham, replies that he "shall be most happy, in every way in his power, to co-operate with the Committee of Industrial Instruction in their endeavour to carry out the great principle so ably and clearly set forth in their address."

Mr. Walter Crum, of Glasgow, a Juror at the Paris Exhibition, "has always advocated the dissemination of the principles of Art and Science among the People, and has taken some share in the promotion of that object, and is thoroughly convinced of its importance."

Mr. William Ellis, well known as always taking a leading part in promoting education, writes: "I sympathize greatly in all your expressions and proposals; and there is nothing which I am attempting which would not be promoted most powerfully by the adoption of what you seem to be aiming at."

Mr. Fairbairn, of Manchester, the eminent engineer, and a Juror at the Exhibition of 1851 and the French Exhibition of 1855, gives his opinion as follows:—"That a better and more efficient system of elementary instruction should be adopted does not admit of doubt; and the want of such a system is equally apparent to all those who have watched the progress of the mechanical and industrial arts since the introduction of the steam engine and the peace of 1815. From that period it is obvious that the unprecedented increase of manufactures, the numerous mechanical inventions, the introduction of steam navigation, and the ensuing discoveries of the electric telegraph and locomotion by steam, are in themselves sufficient inducement to urge the necessity of that preliminary instruction anticipated by the Committee, and so much in demand by those who are the sinews of our national ascendancy and the true supports of our national wealth."

Mr. Felkin, late Mayor of Nottingham, and a Juror in 1851 and 1855, agrees "that education should include industrial knowledge, so far as concerns principles, and the mode of working them out in practice."

Mr. J. Hick, of Bolton, a juror in 1851, "quite approves of the object had in view, and the suggestions as to the means of its attainment. . . . . It is very desirable that the courses and order of instruction should be well established and defined, or laid down at a Normal and Central Institution in London, to which the different schools can refer, and from which they may procure instructors in the various branches of education desired to be inculcated."

Mr. Lingen, Secretary to the Committee of Privy Council on Education, states, that he "should be very glad to see Industrial Instruction (as defined in the prospectus) introduced into popular education."

Professor Miller, of Cambridge, a Juror in 1851, observes: "I cannot too strongly urge the necessity of taking due precaution in starting your schemes for laying the foundation of the Industrial or Art Education, by thoroughly teaching the elements of Mathematics, especially Geometry. I am aware that there will be great difficulty in doing this, on account of the strange jealousy of every thing like Science on the part of the so-called practical men in this country; men who in their own best works commit the most glaring blunders for want of a smattering of geometry and physics, and who hold that scientific acquirements are a bar to the possibility of gaining a knowledge of strength of materials, prices of earthwork, masonry, &c.; and who act upon that conviction by a discreditable compact to keep out of the practical profession all men possessing the requisite scientific preparation."

Mr. Herbert Minton of Stoke, who received the Council Medal at the Exhibition of 1851, and the "Grande Medaille d' Honneur" at the Paris Exhibition, is of opinion, that "unless something is done to assist the manufacturers of this country, in the way of applying Science as well as Art to our practical knowledge, we shall find that England will be left behind in the race of competition, which is now pressing us hard."

Professor (now Canon) Moseley, a Juror at the Exhibition of 1851, says, "I have only to express my hearty concurrence in the movement which the Society of Arts proposes to realize in favour of Industrial Education. The cause is one which I have advocated for many years."

Mr. Robert Napier of Glasgow, a Juror at the Exhibition of 1851, and who received the "Grande Medaille d'Honneur" at the Paris Exhibition, writes, "The subject I consider one of the greatest importance for the future prosperity of the country, it being my opinion that if we are to maintain the high position we now hold as a nation, our operatives and artizans, &c. must not only be expert, practical men, but, as indicated in the circular, ought to know and understand the principles upon which manufacturing processes depend."

Mr. Nasmyth of Manchester, who received the Council Medal in 1851 for his famous steam hammer, "hopes to see the day when

every town, great and small, will have its Crystal Palace or Museum of Art and Manufacture. The exhibition of whatever is truly excellent and perfect in Art and Manufactures tends directly to improve the taste of the beholder, in forcing on his mind, through the eye, a standard of excellence and perfection. It would indeed be most desirable to establish higher Schools of Industrial Art and Manufactures. It may not be practicable to teach branches of manufacture in such, but simply the principles."

Mr. Pattinson of Newcastle-on-Tyne, a Juror at the Exhibition of 1851, says, "I have well considered the circular of the Society of Arts, and I very much approve of the whole of it. One's eyes cannot be shut to the fact, that almost all manufacturing processes now depend more on intelligence and skill, rather than on locality; and most branches are becoming so highly developed that some, and in many cases much, scientific knowledge is required for their successful pursuit."

Mr. S. Schwabe, of Manchester, "would be glad to see some system introduced by which some knowledge of Mechanics, and other matters relating to industry, could be imparted to the children frequenting our common schools."

Mr. James Simpson, of Edinburgh, states "As a zealous, though humble educationist of a quarter of a century standing, I cannot but feel interested in the views of the Society on this subject. We were beaten,—unmistakeably beaten,—especially by the French exhibitors in 1851, wherever manufactures particularly depended on Science."

Archdeacon Thorp, Warden of Durham University, observes: "I consider Industrial Instruction to be of paramount importance in the present condition of society."

Dr. Tyndall, F.R.S., a supplementary Juror at the Paris Exhibition, writes thus strongly: "In wishing success to the undertaking in which you are engaged, I express the feeling of every individual who would like to see England rescued from a position which has long been a reproach to her. The Committee of Industrial Instruction is the outward and visible indication of a great public want, of a want which will assuredly find less pleasant

means of utterance by and bye, if it be not met and satisfied in time. . . . The results of such a movement are incalculable; among other things it would abolish the unnatural divorce at present existing between the cultivator of Science and the practical man; the former would learn that every practical realization of a thought furnishes a purchase for new speculative effort, while the latter would learn how society would be his 'practice,' had it never possessed a scientific base."

Lastly, Professor John Wilson, a deputy attending the Juries at the Exhibition of 1851, and a Commissioner to the New York Exhibition of 1853, expresses himself as follows:—"To those who have observed the social and intellectual condition of the industrial classes on the Continent, and compared it with our own, but little evidence is required to prove that our system of instruction is defective in principle and inferior in results. The Exhibition of 1851 furnished additional proofs of this, and forced conviction upon the minds of all thinking men. I quite believe with your Committee that the great want of the day is a thorough system of Industrial Instruction, not merely for the middle classes, but adapted also to the requirements of that class more directly dependent on their individual exertions."

Paris Exhibition.

In the recent Universal Exhibition at Paris we naturally took great interest. Based as it was upon the principles which first received a practical application in the Great Exhibition of 1851, adopting in a great measure the details of classification, arrangement, and management that we ourselves had employed, and establishing for the year 1855 that comparison of the varied products of industry of the different countries of the world which we had effected four years previously, we could not but view with satisfaction an undertaking so similar to that in which we had been ourselves engaged, and be anxious to render any assistance that might be in our power towards promoting the objects of the Imperial Commission. Even as respects the mere exhibition of articles, we were able to be of some assistance, partly by forwarding for exhibition various articles belonging to us, and deposited in our Trade Museum, and partly by lending to many of the Exhibitors, who at the close

of the Exhibition of 1851 had presented to that Museum the goods then exhibited by them, the specimens thus presented for the purposes of exhibition at Paris.

Appointment of Jurors.

With regard to the important question of the selection of Jurors to represent the interests of this country at the Exhibition, we undertook, at the request of Her Majesty's Government, the task of preparing a list of the names of those gentlemen who appeared to us, from the experience gained by us in 1851 and other reasons, well qualified to fill the delicate and onerous office of Juror in the various classes into which the Exhibition was divided. The names of the persons who, in pursuance of the request of the Board of Trade founded upon the recommendations submitted by us, accepted the appointments in question, will be found in Appendix Q.

Results of Exhibition as affectiug British Industry.

As respects the results of that Exhibition as affecting British industry, it is understood that the forthcoming Reports on the Exhibition, prepared for Her Majesty's Government by various British Jurors, will strongly confirm the opinions expressed by us in our Second Report as to the necessity of steps being taken without delay in this country to enter upon a system of Industrial Education, by the aid of which we may be enabled to maintain our olden pre-eminence in the race of competition in the markets of the world.

Opinions of Chambers of Commerce.

The recent published Reports on the Paris Exhibition by deputations from several of the Chambers of Commerce of this country, also contain striking evidence to the same effect. The Belfast Deputation express themselves as follows:—

"Great efforts are making by Germany and Belgium to extend their export linen trade. We have already stated that they are imitating our finish and quality; they are also encouraging intelligent persons from this neighbourhood to settle in both countries, to instruct them in the various processes of spinning, weaving, and bleaching; and are, in many instances, introducing the power-loom to cheapen production and improve quality. A general opinion appears to prevail, that as the power-loom gave a new impetus to the cotton trade, a similar effect will be produced when it is generally employed in the manufacture of linen. It will require our manufacturers, therefore, to see that our Continental neighbours do not get before them in the

march of improvement, and we would recommend their adoption of every new principle of production that ensures economy and despatch, and so, by progressive advancement, maintain the advantageous position they now possess."

The Huddersfield Deputation arrived at the following conclusions:—

"Upon the subject of the education of workpeople, it is worthy of remark, that on the Continent great advantages are derived from weaving and industrial schools, such as are established at Elberfield, Mülheim, and other places, where young men of all classes are taught designing and its practical application at the loom—chemistry and its application to all branches of manufacture, and go through a regular course of training for the manufacturing business generally. Such schools have proved of the greatest service to both masters and workmen; and the Council urge the merchants and manufacturers of the West Riding to consider whether such an establishment in a central position of the woollen district would not lead to advantageous results.

"After carefully reviewing the whole subject, and weighing with impartiality and candour the information which has been obtained, the Council have no reason to fear but that British capital, industry, and enterprise may still maintain for us the pre-eminence which we have hitherto enjoyed for producing goods adapted to the varied wants of the world. At the same time there is ample proof afforded that the nations of the Continent are quite alive to the importance of encouraging manufacturing industry in all its branches, and that they immediately avail themselves of every improvement in machinery, either in use amongst us, or invented by themselves, for cheapening their productions. The disparity which existed between these nations and ourselves some thirty years ago is, it must be admitted, now considerably lessened, and our present most important advantage over them, in the transit of raw material to the manufacturers, and manufactured goods to the various markets, is daily becoming less appreciable by the increase of Continental railway communication, and the extension of their commercial shipping. The Council wish, therefore, to impress upon our manufacturers the absolute necessity of making every effort, and putting forth their best energies to meet

the growing competition which is thus offered to them, and not allow themselves to be lulled into a state of inactivity or false security by any mistaken ideas of their own inherent superiority. It cannot be denied that the Continental manufacturers now successfully compete with us in several neutral markets, which until recently were almost wholly supplied by us."

The Deputation from the Leeds Chamber of Commerce report that "the attention of our manufacturers and merchants ought to be awakened to the spirit of enterprise which evidently characterizes in a great degree their Continental competitors. It is certain that the latter are making every effort to attain a position of superiority. All new processes are tried with a disregard to immediate outlay, which cannot but give great encouragement to inventors, who find their reward certain if their improvements are practical; and the deputation earnestly urge upon the manufacturers of Yorkshire a greater degree of liberality and of enterprise in the adoption of new machines and improved methods than has appeared latterly the case.

"A consideration of the machinery generally in use upon the Continent cannot but conduce to a conclusion similar to that now expressed by the Deputation. . . . . An improved scientific education for the class engaged in practical superintendence of our factories, a better acquaintance with the chemistry of the arts, with the principles of mechanics, and with the investigations of scientific men into the nature and character of the infinite variety of raw material; these are objects to which the efforts of all well-wishers of England, as a manufacturing country, should be turned with unceasing energy."

Resolutions of Jurors.

We have, in reference to the same subject, to call special attention to the following Resolution, unanimously adopted at a large meeting of English Jurors, held at Paris on the 28th July last year:—

"Resolved,—That the manifest progress made by France and other Continental States, as evidenced by the variety and excellence of the national products, the number and ingenuity of the inventions, and the general character of the manufactures exhibited in the Palais de l'Industrie, induces the conviction that it is only by great exertion, under the most favourable circumstances, that the hitherto

almost uncontested superiority of Great Britain in the mechanical and chemical arts can be maintained."

The following Jurors were present on the occasion of the adoption of the above Resolution:—Sir David Brewster (Chairman), Professor Cockerell, Mr. Crampton, Professor Owen, Mr. Rennie, the Master of the Mint, Mr. T. De la Rue, Mr. Fairbairn, Professor Wheatstone, Dr. Hofmann, Mr. Warren De la Rue, Sir Joseph Olliffe, and Mr. Manby (Secretary).

When we bear in mind the important share which the chemical processes used in manufactures, and the machinery by means of which those manufactures are carried on, must necessarily have in assisting to maintain the commercial supremacy of this country, it cannot be denied that this deliberate expression of opinion on the part of such a body of eminent practical men, which bears out with great force the accuracy of the views enunciated by us in our Second Report, is one that demands the serious and immediate attention of the manufacturing and industrial classes of our population.

The following important Resolutions were also passed unanimously on the same occasion:—

"Resolved,—That a comparison of the Public Museums of the objects of Nature in Paris and London, has impressed us with the conviction that grievous inferiority and disadvantage attach to England in the absence of any organization for diffusing a knowledge of the nature of such collections and of the principles of Science deducible from and illustrated by them.

"That the value of the Public Lectures, illustrative of the several Departments of Natural History in the Jardin des Plantes in Paris, in the advancement of the Industrial Arts, has been so strongly manifested in the present Exposition, as to render it most desirable that the corresponding Department of Natural History at the British Museum should be similarly explained in Public Lectures by Professors of those branches of Natural Science."

"Resolved,—That the Members of the Jury, in viewing the magnificent collection of Mechanical Models and Scientific Instruments in the Conservatoire des Arts et Metiers, the College de France, and a great number of other Public Institutions of Paris

and other cities of France, perceive with regret that there exist no similar collections in any city of the British Empire, and take this opportunity of expressing their opinion that the establishment of such Museums, in addition to those which already exist, to illustrate various branches of Natural Science, would be attended with great benefit to Science and the Arts."

"Resolved,—That the present Exposition has strongly impressed us with the intimate dependance of the characteristic beauty and taste manifested in the French manufactures upon the enlightened and liberal encouragement afforded by the State in the establishment and support of the Institute and the Government Schools of the Arts of Architecture, Sculpture, and Painting, and that whilst acknowledging the value of the recently-established School of Design in London, we are strongly of opinion than an organization for the teaching and diffusion of the higher principles of the Graphic Fine Arts is most desirable, and would not fail of being productive of highly remunerative results to the Industrial Arts and Manufactures of Great Britain."

Statistics of Paris Exhibition.

It may be interesting to record the following statistics respecting the Paris Exhibition. The total number of visitors to the "Palais de l'Industrie," between the 15th May, the date of its opening, and the 1st December, when it was finally closed to the public, was 3,626,934, in addition to 906,530 visitors to the "Palais des Beaux Arts;"* of this number 40,000 were British subjects, including 2,768 furnished with workmen's passports free of charge. The total receipts are stated to have been 2,941,668 francs, or 117,667*l.* The expenditure is supposed to have amounted to 500,000*l.*, exclusive of the cost of the Palais de l'Industrie, which exceeded that sum. The total number of Exhibitors was 20,839, about one-half of whom were French, while of the remainder 1,555 were from the United Kingdom, and about 1,070 from the British Colonies. The value of the British goods exhibited was estimated at 693,627*l.*, in addition to the Fine Arts Collection, valued at 137,560*l.* Out of the British

* The total number of visits paid to the Exhibition of 1851 was 6,039,195. The total receipts on that occasion were 506,000*l.*, and the total expenditure about 330,000*l.*

exhibitors in the industrial classes, 931 received honorary awards from the Juries; 15 obtaining the grand medal of honor, 32 the medal of honour, 301 the first class medal, 353 the second class medal, and 230 honourable mention.

Laboulaye on Industrial Art.

In reference to the question of Industrial Education, we may notice that Mons. Laboulaye, the eminent French writer on Art has, subsequent to the Paris Exhibition, published a work entitled "Essai sur l'Art Industriel,"† containing a passage of which the following is a translation:—

"The study of the Fine Arts, which is, in its highest manifestations, the great means of popularizing good taste, of producing eminent artists capable of forming schools, and giving a happy impulse, is of extreme importance for France, if she would not lose her position, and be degraded in presence of the intelligent efforts of rival nations, who neglect no means of improving the taste of their producers, by developing instruction in design, and the public exhibition of the master-pieces of Art.

"England, with her eminent good sense, saw clearly at the Exhibition of 1851 all that she had to do in this direction, and forthwith founded the Museums at Sydenham and Marlborough House, as well as a large number of Schools of Design. She perfectly understood that this was a vital condition of success for her powerful industry, so admirable in a technical point of view, but which was surpassed by rival nations so far as taste was concerned. She felt that the future of her immense export trade depended on the artistic progress of her producers.

"It is, in fact, this precious quality of taste which especially distinguishes the similar products of nations that have arrived at a high degree of educational progress, and it is certainly the element in which resemblance is most difficult. To copy a machine invented in a neighbouring country is easy, in the present state of the mechanical arts; to give taste to the workmen who have to do with the different parts of an article of vertu, so as to put them together with a clear appreciation of the result to be obtained, almost requires several generations of study and cultivation.

† Paris, 1856.

"The multiplicity of the products of art due to the initiative of individuals in a whole population of working artists, renders its mere imitation insufficient; it constitutes an almost unapproachable superiority in a nation, which, possessing it, does not abandon herself. Hence the permanent superiority over intelligent rivals of some of our industries, such as the silk trade of Lyons, &c."

Cocquiel on Industrial Instruction.

We may take this opportunity of adverting to a valuable book on Industrial Instruction in England, published by Mons. de Cocquiel,* who was entrusted by the Government of Belgium with a mission to this country, for the purpose of reporting on the effects produced by the want of a system of such instruction. A reference to the extracts from this Report which we have given in Appendix R. will show that his inquiries led him to form opinions on the subject in harmony with those entertained by ourselves, although at the time when his work was originally published, he was necessarily ignorant of the nature of our views, our Second Report not having been then before the public. This concurrence of opinion on the part of an intelligent foreigner, specially selected by his own Government on account of his aptitude for properly considering the question, is worthy of notice.

The Belgian Government, in addition to sending the Chevalier de Cocquiel on the above mission, has evinced its interest in the question of Industrial Instruction by the appointment of a Commission, under Royal Decree, bearing date the 14th December 1851, for the purpose of "proposing measures to the Government relative to the improvement and development of Industrial Instruction" which Commission made their Report in August 1852, entitled "Report on the Organization of Industrial Instruction." In this work, after giving an account of the different existing institutions in Germany, France, England, and Belgium, the Commission recommended the adoption of measures very similar to those suggested by ourselves. We have ascertained, on making inquiries through the Foreign Office, that the whole question raised in the above Reports is now under the consideration of the Belgian Government.

* Industrial Instruction in England; being a Report made to the Belgian Government by the Chevalier de Cocquiel. Chapman & Hall, 1853.

In the meantime there has been established at Antwerp, under the authority of a Royal Decree, a "Superior Institute of Commerce, for special Instruction in theoretical and applied Commercial Science." A School of Arts and Trade has also been formed at Tournay. Two official Reports on "the Organization of Instruction in the Graphic and Plastic Arts," published in 1853 and 1855 respectively, also bear testimony to the movement now taking place in Belgium.

Educational Institutions in Bavaria.

We called attention in our Second Report (page 12), to the exertions made in many foreign countries to promote Industrial Education, and submitted, in an Appendix, extracts from a lecture by Dr. Playfair on the subject. Amongst the countries especially alluded to therein, Bavaria occupied a conspicuous place, as being one in which a regular system of such education had for many years existed, and with the best results. Since the date of that Report, Her Majesty's Government, taking advantage of the opportunity afforded by the appointment of Consul-General Ward to attend and report upon the Great Exhibition of German Industry held at Munich in 1854, directed him to make a Special Report on the Educational Institutions for Practical Science and Art existing in Bavaria. A large quantity of valuable information on the subject was accordingly collected by Mr. Ward, and transmitted to the Foreign Office in a despatch dated the 18th October 1854. Owing to its interesting and important nature, we have thought it right to give it *in extenso* in the present Report; and it will accordingly be found in Appendix S.

Erection on Estate of Museum Building of corrugated Iron.

From what has been stated in the previous part of this Report, it will be obvious that since the date of the publication of our Second Report, three years ago, very marked progress has been made towards the practical realization of the scheme then put forward by us. Irrespective of the question of the proposed removal of the National Gallery to the Kensington Gore estate, we have shown numerous instances in which interesting and valuable collections of a permanent character have either been already formed or

are now in process of formation, but for the public exhibition of which, as required in order to render them of real benefit, no means whatever have hitherto existed.

Under these circumstances we considered it desirable to make inquiries as to the best and most economical manner of providing means for the proper display of these various collections on our estate, bearing in mind the importance of erecting a structure, which, without interfering on the one hand with the permanent occupation of the great square enclosed within the main boundary roads, might, on the other, be indestructible in its character, and yet be susceptible of being moved to any other spot at a trifling cost; and we were led to the conclusion that in no way could this be so advantageously effected as by means of a building of which iron should form the chief material. We accordingly procured detailed drawings and specifications of such a building from Messrs. C. D. Young & Co., of Edinburgh, the well-known contractors, accompanied by estimates of the cost of its construction.

Finding that a Museum, admirably adapted in all respects for the purposes in question, could be erected at a very moderate cost, we brought the whole subject under the notice of Her Majesty's Government. The correspondence that passed on that occasion will be found in Appendix T.

It will be seen on reference to that Appendix that we recapitulated the different instances in which the want of the means of exhibiting various important national collections was sensibly felt, as already shown in the course of this Report, alluding also to the Museum belonging to the Department of Science and Art now temporarily deposited in Marlborough House, from which it will be necessary, under the provisions of the Act 13 & 14 Vict. c. 78., as previously mentioned, to remove it at an early date, together with the portion of the National Gallery at present exhibited there; and we showed the importance of losing no time for providing for the safe custody and exhibition of these various collections. We further submitted the various plans that had been prepared under our directions by Messrs. Young, and explained the grounds upon which it appeared to us that the building therein indicated combined in

the greatest possible degree the different qualifications to be desired in a structure designed for the purpose of the proposed Museum. The total cost of the building, including the outlay necessary for fittings, &c., was estimated by us at 15,000*l.*

This proposal having been submitted by the Treasury for the consideration of the Board of Trade, received the approval of that Department in a letter that will be found in the last-mentioned Appendix, and an estimate for the above sum was accordingly submitted to Parliament, and after a long discussion was voted by the House of Commons on the 2nd August last.

The Museum which is now being erected on the Kensington Gore estate* in conformity with this vote, and the drawings of which are given in Appendix T., is 266 feet long, 126 feet wide, and 30 feet high. It contains two galleries extending the whole length of the building, and affords a total exhibiting area of 6,400 square yards or $1\frac{1}{3}$ acres. It is constructed throughout of corrugated iron, with the necessary provision for securing light, warmth, and ventilation. For further particulars respecting it we would refer to the Appendix last mentioned. Sir William Cubitt, the member of our Commission who undertook the entire charge of superintending the erection of the Great Exhibition Building in Hyde Park, has been entrusted by Her Majesty's Government with a similar duty in the case of the present building, which we have reason to hope will be entirely completed and fit for immediate occupation early in the summer of this year.

The question of the exact method of apportioning the exhibiting space which the Museum will afford amongst the different collections, &c., which it is proposed to deposit and exhibit there, and the precise nature of the fittings to be employed, remains open for future consideration and arrangement.

Conclusion.

Having now explained in detail the progress made since the date of our last Report, in the execution of the important duties entrusted to us by the gracious favour of Her Majesty, it remains for us, in

* The exact site on which this building is being constructed is indicated in the map of the estate prefixed to this Report.

conclusion, briefly to recapitulate the general results set forth in the present Report.

And first it is our duty to return our humble thanks to Her Majesty for the continued interest manifested by her in the objects for which we are incorporated; and for the continued support and countenance which she has been graciously pleased to extend to us.

As respects the question of the site that has been purchased by us, for the reception of Institutions connected with Science and Art, in the manner indicated in our last Report, we have shown that its great natural capabilities have been properly developed by means of the construction of important lines of communication, and other improvements; and that we are still occupied in taking the remaining steps requisite for perfecting the estate, and rendering it in all respects fit for the great national objects to which it is to be applied; a task which, though attended with considerable practical difficulties, and necessarily a work of time, is yet proceeding satisfactorily and uninterruptedly to an early conclusion.

With regard to the general progress that has been made in the three years that have elapsed since our scheme for the promotion of Art and Science in their practical bearings upon productive industry was put forward, it has been seen that the most marked and satisfactory results have been even already attained. Parliament has recognized the importance of the objects in view, by liberal pecuniary contributions, and has enabled the Government to give practical effect to the public demand for increased means of instruction in Science and Art, by the establishment and development of a large and important department, devoted to that especial purpose, and the benefits of which are made to extend over the whole country, instead of being confined to the metropolis, where the central organization and action must necessarily be.

In addition to these efforts on the part of the State, energetic local and independent exertions are being made in various places to the same end.

Satisfactory relations have been at the same time established between the Government and ourselves, and arrangements entered upon for securing harmony of action in all that relates to the

appropriation of the site purchased at the joint expense of the public and the Royal Commission.

The recommendations of the Committee of the House of Commons on the National Gallery constitute another important step towards the development of the scheme put forward by us, whilst the numerous collections and museums connected with Science and Art that have been either established or largely extended since our last Report show a further advance in the same direction.

Valuable evidence has been collected corroborative of the views that have been advanced by us on the subject of Industrial Education, whilst the results of the Paris Exhibition of 1855 have served to confirm, in the minds of those best competent to judge, the conclusions at which the experience of the Exhibition of 1851 had already compelled us to arrive, as to the importance of systematically imparting instruction in science and art to the industrial classes of the community, to enable them to maintain their pre-eminence in the markets of the world.

Finally, we have shown how a practical beginning has been made, with the support of Parliament, towards the realization of the comprehensive scheme in contemplation of which the Kensington Gore estate was purchased, by means of the erection of a structure sufficiently extensive to provide for the more immediate wants of the public, without prejudice to the adoption hereafter of measures calculated to make permanent provision for those wants, on a scale worthy of the nation.

Being thus confirmed in our original views by the additional experience of the three years that have elapsed since the presentation of our last Report, and fortified by the countenance of the Crown, and the marks of public confidence that we have received, it will be our constant endeavour, in the discharge of the duties graciously entrusted to us by our Sovereign, to show ourselves deserving of that countenance and confidence, and to co-operate with Her Majesty and the country in any manner that may be desired of us; and, bearing in mind the success which attended our labours in the object for which we were originally constituted as a temporary Commission, to do all that lies in our power to ensure a similar

success to our efforts to promote the more lasting, and, as we trust, still more beneficial objects, for which we are now permanently incorporated

Given under our Corporate Seal, at the Palace of Westminster, this Twelfth day of April 1856.

L.S.

EDGAR A. BOWRING,
Secretary.

ALBERT.
BUCCLEUCH.
DERBY.
ROSSE.
GRANVILLE.
EGERTON ELLESMERE.
PALMERSTON.
STANLEY OF ALDERLEY.
OVERSTONE.
J. RUSSELL.
H. LABOUCHERE.
W. E. GLADSTONE.
B. DISRAELI.
B. HALL.
G. C. LEWIS.
A. Y. SPEARMAN.
CHARLES BARRY.
W. CUBITT.
C. L. EASTLAKE.
CHARLES LYELL.
R. MURCHISON.
RICHARD WESTMACOTT.
THOMAS BARING.
THOMAS BAZLEY.
RICHARD COBDEN.
WALTER COULSON.
C. WENTWORTH DILKE.
T. F. GIBSON.
JOHN GOTT.
DANIEL SHARPE.
JOHN SHEPHERD.
ROBERT STEPHENSON.
W. H. SYKES.

APPENDIX.

APPENDIX A.

CORRESPONDENCE between HER MAJESTY'S COMMISSIONERS and the TREASURY on the Subject of LAND PURCHASES at KENSINGTON GORE, supplemental to the original Purchases towards which the Sum of 150,000*l.* was voted by Parliament.

1.—HER MAJESTY'S COMMISSIONERS to the CHANCELLOR of the EXCHEQUER.

SIR, Whitehall, September 23, 1853.

I AM directed by Her Majesty's Commissioners for the Exhibition of 1851 to acquaint you that, the time having arrived when it becomes necessary to consider the steps to be taken for the purpose of obtaining, next Session, an Act of Parliament, with the usual compulsory powers, to enable them to purchase such portions of land at Kensington Gore as have yet to be secured, in connexion with the Surplus Scheme, they have proceeded to give the fullest and most careful consideration to their present position in respect of the whole of the land purchases, whether agreed upon or completed on the one hand, or yet remaining to be made on the other, out of the sum of 300,000*l.* that has been appropriated thereto by a joint contribution of 150,000*l.* each on the part of Parliament and of the Royal Commission.

The consideration of this question on the part of Her Majesty's Commissioners has also been naturally induced at the present moment by the recommendation on the subject of the site of the proposed New National Gallery, contained in the report of the National Gallery Committee, which has just been presented to the House of Commons, to the effect that the Royal Commissioners' offer of a site on the estate at Kensington Gore should be accepted.

The plan, of which I am directed to enclose a copy, contains a delineation (coloured green) of the land that has been purchased by the Commissioners up to the present time, as well as of the great lines of road which they have agreed to make through the property, in conjunction with the owners of the various surrounding estates.

The annexed statement (No. 1.) exhibits the manner in which the sum of 300,000*l.*, that has been contributed towards the land purchases, has been expended. The amount which at the present moment remains in hand out of that sum, and applicable to further purchases, is shown by the statement to be 13,759*l.* 19*s.* 7*d.*

Her Majesty's Commissioners are very sensible of the extreme importance of securing, for the national objects to which it is proposed to devote the whole of the estate purchased by them, the absolute possession of all the land that is included within the main roads marked in the accompanying plan, by reference to which it will be seen that a certain portion of that land still remains unpurchased; that on the right, comprising the Eden Lodge Estate, and a small piece of land belonging to Mr. Freake; and that on the left a wedge piece, very narrow in the lower part, extending far into the Commissioners' land, and belonging to various proprietors. This latter piece, known by the name of Gore Lane, is covered with houses, chiefly of a very inferior character, but comprising some, viz., those belonging to Mr. Aldridge, at the Hyde Park end of the wedge, of a superior and expensive description.

The Commissioners have caused a careful estimate to be prepared under Mr. Cubitt's direction, by Mr. Higgins, the eminent surveyor, of the probable cost of obtaining the different portions of land above alluded to, commencing at the lower end (which portion it may be considered indispensably necessary to secure in any case), and the results are exhibited in the accompanying return (No. 2.), which also includes an estimate of the cost of making the roads, and of purchasing the tenants' interests in the line of them; these latter items of expense being, under any circumstances, unavoidable.

It is obvious that the above-mentioned balance of 13,759*l.* is quite inadequate for the purpose, and that in fact it would only suffice to secure a very small portion of the property that it is desirable to purchase.

It has, therefore, been the object of Her Majesty's Commissioners to ascertain how far it lies within their own power, by means of a further contribution from the surplus funds in their possession, to meet the deficiency which is found to exist. The total amount of that surplus appears from the enclosed statement (No. 3.) to be 186,124*l.*, or 12,826*l.* more than was originally estimated by the Commissioners in their second report to Her Majesty. Deducting from this amount the sum of 150,000*l.* already appropriated to the land purchases, a balance of (in round numbers) 36,000*l.* still remains in the hands of the Commissioners.

Being anxious to give every possible assistance towards securing the whole of the property embraced within the proposed roads, Her Majesty's Commissioners have resolved to appropriate a further sum of 15,000*l.* towards the purchases in question, which will leave a balance in their hands of about 21,000*l.* This sum is the minimum which they feel they can retain with safety, having regard to the necessity of providing for their own current expenses, and for any unforeseen contingencies.

This additional vote of 15,000*l.*, when added to the balance of 13,759*l.*, as yet unappropriated out of the original surplus grant of 300,000*l.*,

represents a total sum of 28,759*l.* at this moment applicable to the necessary further purchases. But the insufficiency of this sum to meet all the requirements of the case is shown by Mr. Higgins's estimate. It will be necessary, moreover, to reserve a sum of about 3,000*l.* out of that amount, to defray the cost of redeeming the land tax at present payable on the estates already purchased, or the possession of which will probably be secured.

The Commissioners cannot refrain from expressing their opinion that it is extremely desirable, and that it would render the purchase more complete, to include in it the whole of the property lying within the road, as marked on the plan. . . . . .

Having thus pointed out the exact position in which they are at present placed in reference to the land purchases that form so important a step towards the execution of the duties graciously entrusted to them by Her Majesty, and in the objects of which Parliament has already expressed its concurrence by means of a considerable pecuniary contribution, it only remains for Her Majesty's Commissioners, in bringing the matter under the notice of Her Majesty's Government, to request that they may be favoured with an early intimation of their decision as to the extent to which they will be prepared to recommend to Parliament any further contribution.

I have, &c.

(Signed) EDGAR A. BOWRING.

The Right Hon.
W. E. Gladstone, M.P.,
&c. &c. &c.

2.—TREASURY MINUTE respecting the above LETTER.

October 28, 1853.

THE Chancellor of the Exchequer communicates to the Board a letter bearing date the 23d September, which has been addressed to him by Mr. Bowring, on the part of Her Majesty's Commissioners for the Exhibition of 1851, together with accompanying papers, and a plan of the estate which the Commissioners have acquired at Kensington, and a sketch of one of the modes in which the ground might be applied to the purposes contemplated in its purchase.

The Chancellor of the Exchequer has made it his business, in considering this letter and the plan annexed, to obtain further information on several points of importance.

He understands that the Commission considers itself bound to the execution of the main roads as they are laid down in the plan, which, together with the Kensington-road, describe a square fronting Hyde Park, and which comprise about 56 acres within the roads, or 68 acres if the four boundary roads be included.

Within that square lie several portions of property which have not been acquired by the Commissioners, viz., beginning from the eastward, a small strip of land belonging to Mr. Freake, the Eden Lodge Estate, belonging to Lord Auckland, and a piece of land to the westward termed the Gore Lane Estate, in the form of a wedge, which pierces into the heart of the Commissioners' property, and which for the present purpose may be most conveniently considered as consisting, first, of two lots, its entire frontage to the north, and second, three lots extending from the back of these to the southern end of the wedge.

Considerable pieces of land, however, which have been acquired by the Commissioners lie beyond the square thus defined.

The Chancellor of the Exchequer considers it to be obviously most desirable, with a view to the effective and satisfactory employment of the ground already obtained, that the whole of the square described by the main roads (waiving, however, any question respecting the narrow strip of land which belongs to Mr. Freake) should eventually be acquired by the Commissioners. But if the possession of the entire square be thus desirable, it is absolutely indispensable, as an inspection of the map will show, that part or the whole of the three back lots of the wedge to the westward should be acquired forthwith, as without these no comprehensive plan, dealing with the land as a whole, and having relation to a centre, could be entertained.

It would appear likely, from the estimates of Mr. Higgins, that irrespectively of Mr. Freake's lot, the square cannot be completed for less than a sum rising from 150,000*l.* to 200,000*l.* On the other hand, Mr. Bowring's letter gives it to be understood that not more than about 25,000*l.* can be supplied by the Commission towards further purchases; and the Chancellor of the Exchequer has since learnt that the deductions on account of roads, and the acquisition of tenants' interests on the estate of the Commissioners, will probably reduce the disposable amount as low as 13,000*l.*, or thereabouts.

Under these circumstances, it is necessary to revert to the Vote of the year 1852, and the expectations with which it was given.

Parliament appears to have been under the impression at the period of that Vote, that so far as regarded the purchase of land, it was final. Had the Government of that day possessed information leading to a contrary conclusion, it would have been their duty to make it known to the House of Commons, and to give the best conjectural estimate in their power of the amount of any ulterior demand likely to arise.

It is now obvious that more money will be, at least temporarily, and perhaps permanently required, and this to an extent even exceeding the first Vote of Parliament, if the entire square defined by the main roads is to be made available for public purposes.

In the event of a new application to Parliament, it appears to be necessary, first, that such information shall be forthcoming as will show that the whole of the land within the square is likely to be required to carry the buildings necessary for the purposes contemplated by the Commission; and second, that there shall be a clear understanding between Parliament and the Commission with respect to the outlying portions of the estate, the selling value of which, at a future, but not remote period, might probably more than cover the whole cost of acquiring the unpurchased portions of the block or square.

Both on grounds of reason, and for the satisfaction of Parliament, the Chancellor of the Exchequer conceives it should be distinctly understood between Her Majesty's Government and the Commission, as a part of the new arrangements contemplated, that no decision, express or implied, is yet taken as to the use which may hereafter be made of the outlying portions of the estate, and that with respect to any or all of them, it will be open to Her Majesty's Government, if they shall think fit, to require at a future time that these portions of the property shall be profitably disposed of, and their proceeds applied to reimburse the large additional outlay which it is now proposed that Parliament shall either at once or eventually undertake to supply.

It would, without doubt, be inexpedient to attempt at the present moment to obtain funds for new purchases within the square by sale or leases of parts beyond it, both because it is as yet uncertain what may be the full amount of demand for accommodation upon the estate, and also because with a view to profitable disposal it would be well to wait until not only the formation of the roads, but the final determination and announcement of the plans of the Commissioners, and perhaps even some progress made towards their execution, shall have given value to the adjacent sites.

Upon the basis of this understanding, the Chancellor of the Exchequer recommends my Lords to acquaint the Commission that Her Majesty's Government will be prepared to propose to Parliament in the ensuing Session such a vote, supplemental to a sum of not less than 13,000*l.*, from the funds of the Commission, as may appear to be requisite in order to enable the Commissioners to obtain those portions of the property of which the early possession is necessary for the progress of their plans.

The Chancellor of the Exchequer observes, that on the map which is transmitted with Mr. Bowring's letter a central block of building is delineated as suitable in size and position for the National Gallery of Painting, should it be transferred to Kensington in conformity with the recommendation of a Committee of the House of Commons which sat during the last Session. To that subject he apprehends that the attention of Her Majesty's Government will be given at an early period; but it is not necessarily connected with the subject of the present minute, since

whatever may be the destination of the central portion of the property, it is equally necessary, for reasons already given, that such portions of the wedge shall be acquired as will put the Commissioners in possession of a block of land adequate to the reception of buildings designed upon a comprehensive plan.

The next question is, to which among the portions of land not yet acquired does the rule thus laid down apply?

The Chancellor of the Exchequer understands that no further progress to any appreciable extent can be made by private voluntary negotiation with any of the persons interested in the block. The Commission will, therefore, as it appears, have to proceed by an application to Parliament for compulsory powers of purchase; and it is obviously prudent, as the Chancellor of the Exchequer apprehends, that an application of such a nature should be limited to those parts of the land of which the immediate or early possession can be proved to be necessary for the purposes of the Commission, as the Commission ought not to be unnecessarily exposed to the risk of defeat before Committees of the two Houses of Parliament.

It appears to be admitted on all hands that no reference for Mr. Freake's land should enter into such an application. . . . . .

There remain for present consideration the three lots of property behind the front lots, and forming the residue of the wedge, termed the Gore-lane Estate, and reaching to the centre of the block defined by the main roads.

It is obvious, with respect to this land, that the acquisition of the greater part is absolutely essential, and of the rest scarcely less than necessary, in order to enable the Commissioners to form any comprehensive plan for the disposal of the estate they have already acquired. And there is another circumstance which distinctly points to the expediency of comprising them all in one and the same application.

They have at present a double access, one from the north through the front lots, and another from the south across the property of the Commissioners. But it is necessary that power should be obtained from Parliament to stop the right of way from the southward, and the parties interested in any lot lying at a distance from the Kensington-road, in a word, in any back lot, might well object to the withdrawal of this right of way, unless a proposal to buy them out formed part of the same measure; while to the front lots the right of way is even now less material, and when the main lines of road shall have been executed, will become entirely worthless.

An application for these three lots of land, forming the hinder portion of the wedge, would therefore seem to be that which the purposes of the Commission require.

The Chancellor of the Exchequer observes that the probable cost of these lots, as estimated by Mr. Higgins, is 38,000*l.*; and if the sum of 13,000*l.* be supplied by the Commission, the sum of 25,000*l.*, should it be necessary, and subject to what has been hereinbefore stated, will be asked from Parliament. The Board will also be aware, from the nature of the case, that where a number of complicated interests, some of them hostile, are to be bought out, even the most careful estimate may possibly be found to err by falling short of the eventual cost; and so long as the Commission and the Government are in a condition to show to Parliament that the rules of economy and caution have been duly observed, it need not be feared that Parliament would decline to grant such further limited sum as might be necessary for the attainment of the property.

My Lords concur in the opinions expressed by the Chancellor of the Exchequer, and direct that a copy of this Minute be sent to Mr. Bowring, for the information of the Commissioners, and that he be requested to state to them that, inasmuch as the letter of the 23d September opens up the consideration of questions beyond what either press, or are susceptible of settlement at the present moment, my Lords have thought it might be more convenient that they should place on record a statement sufficiently extended to serve in some measure as a guide to Her Majesty's Government in conducting the correspondence which may on future occasions arise with Her Majesty's Commissioners for the Exhibition of 1851, respecting the completion and application of the Kensington Estate.

3.—HER MAJESTY'S COMMISSIONERS to the LORDS of the TREASURY.

SIR, Whitehall, March 9, 1854.

I AM directed by Her Majesty's Commissioners for the Exhibition of 1851 to request that you will acquaint the Lords Commissioners of Her Majesty's Treasury, with reference to previous correspondence, that, in pursuance of the general suggestions contained in their Lordships' Minute of the 28th of October last, transmitted in your letter of the 29th of that month, they have not failed to take such opportunities as presented themselves of negotiating for the amicable purchase of the fee-simple of the Gore-lane Estate, belonging to Lord Kensington. The acquisition of this fee, combined with the compulsory purchase, under the Act of Parliament now being sought for by the Commissioners, of the tenants' and other interests in the lower part of the wedge forming Gore-lane, would not only put the Commissioners in possession of all the property necessary for their immediate purposes in this quarter, but also ensure them the ultimate possession of the whole of that portion of the

west of Gore-lane, which is not comprised in their present application to Parliament.

It now affords her Majesty's Commissioners much satisfaction to state that they have at length brought their negotiations with Lord Kensington to a successful issue, and that his Lordship is prepared to dispose of the whole of his reversionary interest in the Gore-lane property, whether scheduled or not, for the sum of 12,500*l.*, as will appear from the accompanying copy of Mr. Higgins's report on the subject.

Mr. Higgins has informed the Commissioners that, in framing his estimate of the cost of making the various compulsory purchases indicated in the enclosure to my letter of the 23d of September last, he estimated the cost of purchasing Lord Kensington's freehold interest in the three lower sections, which it was ultimately arranged should be included in the application to Parliament, at 10,000*l.* The additional sum requisite to purchase his interest in the upper section therefore appears to be only 2,500*l.*

In soliciting the authority of the Lords of the Treasury to effect this purchase on the terms proposed by Mr. Higgins, and which will, as just shown, involve the present outlay on the part of the public of a sum exceeding by 2,500*l.* that which the Treasury Minute contemplated, viz., 25,000*l.*, I am directed by Her Majesty's Commissioners to point out some of the reasons which make it appear to them that such additional outlay is, in the present instance, both expedient and reasonable.

The effect of purchasing by an amicable arrangement Lord Kensington's interest in this property, instead of having to obtain it compulsorily by the proposed Act, will be to put an end to his opposition to the Bill, against which he has petitioned, will render unnecessary an eventual reference to a jury to assess his Lordship's claims to compensation, and will moreover ensure the acquirement at a lower proportionate rate of the portion scheduled in the Bill, inasmuch as the extra cost of ultimately acquiring the upper portion is estimated to amount to nearly 4,000*l.*, while, as has been already stated, it can now be virtually obtained for an outlay of 2,500*l.*

It is unnecessary for Her Majesty's Commissioners to point out the advantageous position in which they would be placed, in respect of future negotiations for the purchase of the tenants' interests in the property, by being the ground landlords of the whole, and the improvement to the neighbourhood likely to result therefrom.

Her Majesty's Commissioners feeling, under all these circumstances, the importance of at once completing the agreement with Lord Kensington, upon the terms provisionally arranged by Mr. Higgins, direct me to request that you will move the Lords Commissioners of Her Majesty's Treasury to favour them at the earliest period with such an expression of concurrence in the above views, and of approval of the proposed extra

expenditure herein referred to, as may enable them to take the necessary legal steps without delay for acquiring possession of Lord Kensington's freehold interest in the Gore-lane property.

I have, &c.

Sir C. E. Trevelyan, K.C.B. (Signed) EDGAR A. BOWRING.
&c. &c. &c.

4.—TREASURY MINUTE on the above LETTER.

March 21, 1854.

WRITE to the Commissioners, that under the circumstances explained in this letter, my Lords consent to increase the Vote, which they undertook by their Minute dated the 28th October last to submit to Parliament, from 25,000*l.* to 27,500*l.*, in order to enable the Commissioners to complete the purchase of the Gore-lane Estate belonging to Lord Kensington.

APPENDIX B.

ACT of PARLIAMENT obtained by HER MAJESTY'S COMMISSIONERS in 1854.

AN ACT to authorize the making certain Roads, and stopping up certain Lanes and Footways between Kensington Gore and Brompton, in the County of Middlesex, and for otherwise facilitating the formation of a Site for Institutions connected with Science and Arts.

[*Royal Assent, 3rd July* 1854.]

Preamble. WHEREAS Her Majesty granted a charter under Her Great Seal, bearing date at Westminster, on or about the fifteenth day of August, one thousand eight hundred and fifty, and after stating therein to the effect that Her Majesty had issued her commission under her royal sign manual, bearing date on or about the third day of January, one thousand eight hundred and fifty, for the promotion of the Exhibition of the Works of Industry of all Nations, to be held in the year one thousand eight hundred and fifty-one, and had thereby for that purpose appointed her most dearly beloved consort, His Royal Highness Francis Albert Augustus Charles Emanuel, Duke of Saxony, Prince of Saxe Coburg and Gotha, Knight of the Most Noble Order of the Garter, and Field-Marshal in her army, and the several other persons therein mentioned, to make inquiry into the best mode by which the productions of Her Majesty's Colonies and of Foreign Countries might be introduced into Her Majesty's Kingdom, and also as respected the suitable site for the Exhibition, the

general conduct of the same, and also into the matters therein mentioned, connected with the said Exhibition, her said Majesty did by her said Charter grant that her said Consort, and the several other persons therein mentioned, members of the said first-mentioned Commission, and the survivors or survivor of them, and such other persons, if any, as should be elected by them, as thereinafter mentioned, should be one body corporate by the name of "The Commissioners for the Exhibition of 1851:" And she did thereby declare that the said Corporation should be established for the purposes therein-after mentioned, and that the capital of the said Commissioners thereby incorporated should be such sums of money as had been then subscribed towards the establishment of the said Exhibition, and other the monies which should come to their hands, and she appointed that the said Commissioners should carry out the said Exhibition in the year 1851, and distribute the prizes and do all matters connected therewith, and dispose of all monies which by any of the means therein mentioned should come to their hands in all respects as they should think fit towards the purposes of the Exhibition, or otherwise in the execution of the powers thereby given to them:

And whereas by a charter under the great seal bearing date on or about the second day of December one thousand eight hundred and fifty-one, Her said Majesty granted and ordained that the said Commissioners so incorporated by the said recited charter as aforesaid, should continue and be incorporated as well for the purposes for which they were so first incorporated as for the purpose of devising a plan for the disposal of the surplus of all moneys which should remain at their disposal after all the expenses relating to the said Exhibition should have been defrayed, and which in their opinion should be in accordance with the expectations held out to the public as therein mentioned, and also in all respects for carrying into effect any plan or plans which might be devised by them as aforesaid: And Her Majesty did thereby empower the said Commissioners to dispose of all such surplus as aforesaid, and the income thereof which might be at their disposal, in the furtherance of any such plan or plans as might be devised by them: And Her Majesty did thereby declare, that for the purposes aforesaid or any of them, the said Commissioners and their successors might purchase and hold lands and hereditaments in any part of Her dominions, and that such lands and hereditaments might be from time to time appropriated, sold, leased, or otherwise applied or disposed of in all respects as the said Commissioners should think fit, and Her said Majesty did thereby direct that the said Commissioners might from time to time, when and as they should think fit, under their Corporate Seal, report to one of Her Principal Secretaries of State on all and every or any of the matters which they might do under the power thereby given: And should also in like manner report as therein is mentioned on all and every or any of the matters which

they might do when and as they might be thereto required as therein is mentioned:

And whereas the said Commissioners, in pursuance of the provisions of the said last recited charter, made a report, dated the eleventh day of November, one thousand eight hundred and fifty-two, to Her Majesty's then Principal Secretary of State for the Home Department, from which it appeared that the probable net amount of the surplus of the receipts from the said Exhibition would amount to one hundred and seventy thousand pounds, and after statements showing the difficulties of procuring adequate space in the metropolis for institutions connected with science and art and the obstacles thus opposed to the systematic co-operation of such institutions the Commissioners reported that they believed they had shown that the want of space and want of system had hitherto been the main impediments to the supplying scientific and artistic instruction to the industrial population, and therefore they had endeavoured to remove them by procuring a spacious and unincumbered piece of ground situate in a most favourable locality, and by making suggestions in relation to the institutions therein mentioned:

And whereas, by "The Consolidated Fund Appropriation Act," cap. 110, passed in the session of Parliament held in the sixteenth and seventeenth years of Her Majesty's reign, it was enacted that there might be issued and applied as therein mentioned any sum or sums of money, not exceeding one hundred and fifty thousand pounds, towards defraying, in the year one thousand eight hundred and fifty-two–fifty-three, the purchase of land at Kensington Gore, for institutions connected with Science and Art, and in aid of the funds already appropriated thereto by Her Majesty's Commissioners of the Exhibition of 1851:

And whereas the spacious and unincumbered piece of ground referred to in the report of the said Commissioners, as having been acquired by them as aforesaid, consists of about twenty-one and a half acres, situate and being in the parishes of Kensington and Saint Margaret, Westminster, or one of them, purchased of John Aldridge, Esquire, and of the trustees of the marriage settlement of the said John Aldridge, and of about forty-seven acres, two roods, thirty-seven perches, situate and being in the same parishes, purchased of the trustees of Baron Villars, and which hereditaments have been conveyed to the said Commissioners, subject to certain leases or agreements for leases, and to certain tenancies respectively affecting the same, and part of the monies so authorized to be issued by the said Appropriation Act was applied towards the payment of the purchase-money for the said hereditaments or part thereof:

And whereas in order effectually to carry out the said plan of the said Commissioners, it is necessary that they should have power to buy up the estates and interests of the lessees and tenants in and upon the

estates so purchased, and all other rights and easements, if any, appertaining thereto, and to purchase other lands in the neighbourhood of the same estates, and to make roads and approaches, and to stop up certain paths or ways:

And whereas the said Commissioners have deposited with the Clerks of the Peace for the county of Middlesex and for the city and liberty of Westminster respectively, plans and sections and books of reference showing the lines and levels of the proposed new roads, and the lands and hereditaments required to be purchased for the same, and showing the lands and hereditaments which are required to be taken and purchased for the aforesaid general purposes of the said Commissioners:

And whereas the Commissioners have agreed to purchase from Lord Kensington and his trustees certain lands, part of which are included in the said plans sections and books, and other parts of which are not so included:

And whereas the objects aforesaid cannot be effected without the authority of Parliament:

May it please your Majesty,

That it may be enacted, And be it enacted by the Queen's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows (that is to say):

Incorporation of Lands' Clauses Consolidation Act.

I. "The Lands Clauses Consolidation Act, 1845," shall be incorporated with and form part of this Act.

Interpretation Clause.

II. In this Act, the expression, "The Commissioners" shall mean the Commissioners for the time being, acting by virtue of the said two several charters and of this Act.

The Commissioners to continue incorporated for the purposes of this Act.

III. The Commissioners shall continue incorporated for the purposes of this Act, as well as of the said two several charters.

Title of Act.

IV. In citing this Act in other Acts of Parliament, and in legal instruments, it shall be sufficient to use the expression, "The Exhibition of 1851 Roads and Lands Act."

Power to the Commissioners to purchase lands described in plans and books of reference.

V. It shall be lawful for the Commissioners to enter upon, take, and purchase, for the purposes of this Act, all, or any, or any parts of the lands described in the said plans and books of reference so deposited as aforesaid; and also of any other lands so agreed to be purchased by or on behalf of the said Commissioners of and from the said Lord Kensington and his trustees, so nevertheless that in no case shall any price be paid for the whole of such lands less than the price already contracted to be paid.

Period within which lands are to be purchased.

VI. The powers of the Commissioners for making any compulsory purchase, under or for the purposes of this Act, shall not be exercised after the expiration of five years from the passing thereof.

VII. It shall be lawful for the Commissioners to make and construct in the lines and levels, and on the lands shown on the said deposited plans and sections, the following roads, videlicet: Power to the Commissioners to construct roads according to deposited plans.

1. A public carriage road, commencing at Kensington Gore, from and out of the road running from Kensington to Knightsbridge, commonly called the Kensington-road, at a point thirty-seven yards or thereabouts to the west of Gore-lane, otherwise Park-lane, and terminating at or near certain almshouses, commonly called Methwolds, or Brompton Almshouses, in Old Brompton;
2. A public carriage-road, commencing from and out of the said intended road firstly before described at a point two hundred and ninety-three yards, or thereabouts, south of the Kensington-road aforesaid, and terminating in the road leading from the Kensington-road aforesaid to Hereford-square, commonly called the Gloucester-road, at a point three hundred and fifty yards or thereabouts, south of the Kensington-road aforesaid;
3. A public carriage-road commencing from and out of the Gloucester-road aforesaid, at Cromwell-row, in the said parish of Kensington, and terminating in the road leading from Knightsbridge to Fulham called the Brompton-road, near to the church of the Holy Trinity, Brompton.

VIII. The Commissioners, in making the said new roads, may deviate from the lines described on the said plans to the extent shown on the said plans, and may deviate from the levels shown on the said sections to the extent of five feet. Power of deviation.

IX. If any omission, misstatement, or erroneous description shall have been made of any lands, or of the owners, lessees, or occupiers of any lands, described in the said plans and books of reference, whether the same shall be required for the said roads or for the other purposes of the Commissioners, it shall be lawful for the Commissioners to apply to two justices of the peace for the county of Middlesex for the correction thereof, and if it shall appear to such justices that such omission, misstatement, or erroneous description arose from mistake, they shall certify the same accordingly, and they shall in such certificate state the particulars of any such omission, and in what respect any such matter shall have been misstated or erroneously described, and such certificate shall be deposited and kept along with the said deposited plans and books of reference at the office of the said clerk of the peace for the county of Middlesex, and thereupon such plans and books of reference shall be deemed to be corrected according to such certificate, and it shall be lawful for the Commissioners to make the works, and otherwise proceed to exercise the powers and authorities hereby given to them, in accordance with such certificate, so far as the same shall alter the said plans and books of reference, but without prejudice to their powers and authorities under this Act. Errors and omissions may be corrected.

Part of the intended road to be laid out as a carriage-way and part as a footway.

X. It shall be lawful for the Commissioners to cause such part of the intended roads to be laid out as a carriage way, and such parts for foot passengers as they shall think proper, such footways being of a convenient width.

Power for the Commissioners to stop up certain lanes or pathways so soon as the roads 1stly and 3dly mentioned are completed and open for foot passengers.

XI. When and so soon as the said roads, firstly and thirdly hereinbefore mentioned, shall have been completed, and shall have been opened for use, subject nevertheless to such restrictions, as to the use thereof by carriages and all other vehicles, as the Commissioners shall think fit to make, and which restrictions they are hereby authorized to impose on the use of all the roads hereby authorized to be made, but which restrictions shall not extend to prevent a free use thereof by foot passengers, it shall be lawful for the Commissioners to stop up all that lane or pathway, called Gore-lane otherwise Park-lane, except so much thereof as is situate within two hundred and thirty feet of the said Kensington-road, measuring along the said lane, and also to stop up a certain other lane or pathway in continuation of Gore-lane otherwise Park-lane, called Brompton Park-lane, which lanes and pathways communicate between the Kensington-road aforesaid and Old Brompton, and also to stop up a certain pathway leading from Gloucester-road aforesaid, at a point three hundred and seventy yards or thereabouts to the south of Kensington-road aforesaid, and running from thence in a straight line to Methwolds or Brompton Almshouses; and immediately upon and after such stopping up the said lane and pathways, the soil of the said lane and pathways respectively shall vest in and belong to the Commissioners or other the person or persons who shall, for the time being, be the owner or owners of the lands next adjoining such lane or footpaths, or through or over which the same lane and footpaths do now pass, and according to their estates and interests in such lands, and in case the same pass through or over lands which belong to different owners, then as to the portions which pass through or over such lands of different owners shall vest in such persons, in divided moieties, according to their estates and interest therein, each person being entitled to the moiety adjoining his or her lands, but so that the site of such lane or pathways be subject to all the powers by this Act given to the Commissioners in respect to the lands immediately adjoining to the same, and to which they shall become attached as aforesaid.

Soil of the roads stopped up to be vested in owners of adjoining lands.

Works connected with the metropolis roads to be constructed to the approbation of the general surveyor of such roads.

XII. Whereas it is intended to connect the public carriage roads by this Act authorized to be made and constructed with the Kensington Road, the Gloucester Road, and the Brompton Road respectively (being portions of the first district of the roads under the care of the Commissioners of the Metropolis Turnpike Roads, north of the Thames, and hereinafter called the Metropolis Roads), at the points shewn on the said deposited plans; therefore all and every the connection of the said public carriage roads with the said Metropolis Roads, or with any of them, shall

be made in concert with and to the approbation of the general surveyor for the time being of the said Commissioners of the Metropolis Roads.

Regulating the widening of the Brompton-road.

XIII. The Commissioners shall widen the said Brompton-road to the extent and from the point of junction with the said public carriage-road thirdly hereinbefore mentioned to the point where the said public carriage-road will terminate in the said Brompton-road, as shown on the said deposited plans. And the Commissioners shall form so much of that part of the said Brompton-road as shall have been widened (hereinafter called "New-road") into a carriage-way, as shall be required by the said general surveyor, and shall, on the north side of such carriage-way, form a raised footpath, with a kerb stone at the edge of such footpath, and shall make and lay down in the said New-road all such drains as shall be deemed necessary by the said general surveyor. And the Commissioners shall raise the level of the said Brompton-road to the level of the said new road, so as to form one continuous surface, and shall continue such raised level with the same inclination westward along the said Brompton-road until such raised level shall meet the present surface of the said Brompton-road, so as to form one graduated and continuous inclination.

New-road to be conveyed to the Commissioners.

XIV. On the completion of such works to the approbation of the said general surveyor, the said Commissioners of the Metropolis Roads shall pay to the Commissioners the sum of five hundred pounds as the price of the site of the said New-road, and the Commissioners shall, on receipt of such sum, convey the fee simple of such site to the said Commissioners of the Metropolis Roads.

Levels of the Metropolis Roads not to be altered or traffic interfered with without consent.

XV. Nothing in this Act contained shall authorize or empower the Commissioners to alter the level of the said Metropolis Roads, or of any one of them, or to stop up or cause to be stopped up the said Metropolis Roads or any part thereof, or to obstruct the passage of carts, carriages, and horses thereon, or in any other manner whatever to interfere with all or any of the said Metropolis Roads, or with the levels thereof, or to impede, stop, or in anywise interrupt the public traffic on such Metropolis Roads, without the consent in writing of the said Commissioners of the Metropolis Roads, or of their general surveyor for the time being.

Saving the rights of the Commissioners of the Metropolis roads.

XVI. Nothing in this Act contained shall abridge, alter, or interfere with the powers and authorities now vested in the said Commissioners of the Metropolis Roads.

Notice to be given and plans submitted before commencement of works.

XVII. It shall not be lawful for the Commissioners to commence any connection of the said public carriage roads with the said Metropolis Roads, or to commence the widening of the said Brompton-road, until three days after the Commissioners shall have given notice of their intention to commence such connection and widening, and shall have delivered plans and sections of the same to the said general surveyor, and that all the drains of the said Metropolis Roads, or any of them, which

shall be taken up, displaced, or interfered with in consequence of the connection of the said public carriage roads with the said Metropolis Roads, or in consequence of the widening of the said Brompton-road, shall be relaid and made good by the Commissioners.

Works to be lighted and watched at night.

XVIII. All such measures of precaution for the public safety during the progress of the connection of the said public carriage roads with the said Metropolis Roads, and of the widening of the said Brompton-road, including the fencing of the works and the lighting and watching of the same by night, shall be adopted by and at the expense of the Commissioners, as shall be required from time to time by the said general surveyor.

Powers to stop up roads temporarily during the progress of the works.

XIX. It shall be lawful for the Commissioners during the making of the said roads, with the consent of two justices for the county of Middlesex, to stop up or cause to be stopped up all or any part of the carriage or footways of the roads, streets, and other places which it may be considered by the Commissioners necessary to stop up, and for that purpose to put up or cause to be put up sufficient pallisadoes, bars, posts, and other erections, and to make such orders for regulating the passage of all carts, carriages, and horses as to them shall seem proper, but all such stoppages and obstructions shall be discontinued and removed on the formation of the said roads, and the Commissioners shall make good all damage done to the pavements of such streets and places by such stoppages and obstructions: Provided always, that it shall not be lawful for the Commissioners to stop up any carriage road or footways on either side of the intended roads for a greater length at any one time than one hundred yards along the line of the intended roads, or some part thereof.

Sewers to be arched over or filled up.

XX. It shall be lawful for the Commissioners to cause to be arched over or filled up all such sewers and drains or parts thereof lying and being in or near the said roads or ways to be made, stopped up, or inclosed as aforesaid respectively as shall appear necessary for completing the purposes of this Act, but so that no public sewer or drain whatsoever, or any private drain, shall be in anywise disturbed, injured, or prejudiced unless another sewer or drain shall have been made in lieu thereof equally serviceable or convenient to the individual or neighbourhood.

Persons whether under disability or not may agree for compromise of doubtful claims, and such compromise shall be treated as sales.

XXI. All persons (including persons under disability) by the said incorporated Act capacitated to sell any estate or interest in lands, may in all respects as if the same were on a sale, contract and agree with the Commissioners for the compromise of any right, title, or interest, or supposed right, title, or interest whatsoever, either in law or in equity, in any lands already purchased or which may be purchased by the Commissioners, and which any such persons would have been capacitated to sell, and may carry into effect any such compromise by any grant, confirmation, or assurance, as the Commissioners shall require, and as might

be done on a sale of the hereditaments under the aforesaid powers, and any such compromise shall be considered in all respects as a sale under the powers of the said Act and this Act, and any moneys paid as the consideration thereof shall be paid, treated, and applied as purchase money under the provisions of the aforesaid Act.

Buildings erected by the Commissioners to be exempt from the provisions of the Metropolitan Building Act.

XXII. All and every the erections and buildings which may be erected by the Commissioners under any power or authority vested in them under this Act or otherwise, shall during the erection thereof, and at all times thereafter, be exempted in all respects from the operation and provisions of an Act made and passed in the seventh and eighth years of the reign of Her Most Gracious Majesty for regulating the construction and size of the buildings in the metropolis and neighbourhood; and from the operation of another Act made and passed in the ninth and tenth years of the reign of Her Most Gracious Majesty for the amendment of the last-mentioned Act.

APPEN

DR. ACCOUNT of the RECEIPTS and EXPENDITURE of HER MAJESTY'S

RECEIPTS.

GENERAL ACCOUNT FOR EXHIBITION.

	£	s.	d.
To Balance as per last Account	213,305	15	8
„ Interest on Exchequer Bills	10,807	19	11
„ Subscriptions	769	7	11
„ Amount from Fox, Henderson & Co., for final Settlement	4,501	1	5
£	229,384	4	11

ESTATE ACCOUNT.

		£	s.	d.
To Balance from General Account		186,436	18	6
„ Parliamentary Grant Session 1852–3	£150,000			
„ Do part of £27,500 „ 1854–5	7,500			
		157,500	0	0
„ Sales of Houses, Old Materials, and Miscellaneous Receipts		893	4	6
„ Rents		4,508	2	5
£		349,338	5	5

We hereby certify, that we have examined the above Accounts of the Receipts and Expenditure of the Royal Commissioners for the Exhibition of 1851 for the period commencing 1st March 1852 and ending 31st December 1855, and that we have found the same to be correct.

T. M. WEGUELIN, Governor of the Bank of England.
S. NEAVE, Deputy Governor of the Bank of England.

We certify, that the above Balance of 101,742*l.* 16*s.* 10*d.*, stated to be in our hands, is correct, viz. 93,196*l.* 13*s.* 9*d.* being invested in 91,000*l.* Exchequer Bills, 4,388*l.* 18*s.* 5*d.* to our credit at the Bank of England, 4,123*l.* 9*s.* 6*d.* at Messrs. Coutts & Co., and 11*l.* 14*s.* 2*d.* in the hands of the Financial Officer, and 22*l.* 1*s.* advanced on account of Museum Building to be repaid.

A. K. BARCLAY,
LIONEL ROTHSCHILD,
WILLIAM COTTON,
J. W. LUBBOCK,
S. MORTON PETO,
} Treasurers.

DIX C.

COMMISSIONERS, from 29th February 1852 to 31st December 1855. CR.

PAYMENTS.

	£	s.	d.
By Services and Compensations	7,929	11	3
„ Medals and Medal Cases	6,504	16	0
„ Printing and Advertisements (including Books of Jurors' Reports, and Binding)	19,816	10	4
„ Salaries and Wages	5,123	12	4
„ Postages and Incidentals	1,946	3	4
„ Amount paid for formation of Animal Produce Museum, and for promotion of Art Education	1,626	13	2
	42,947	6	5
By Balance carried to Estate Account	186,436	18	6
£	229,384	4	11

By Purchase of Land, Redemption of Land Tax and Compensations, viz.: —	£	s.	d.			
Gore House Estate (including interest)	60,834	7	8			
Villars do (do.)	155,793	11	0			
Purchase of Lease held under Lord Harrington for a long term of years	7,964	14	7			
Purchase of additional land for roads	1,000	0	0			
Redemption of Land Tax	1,512	12	8			
Compensation to Tenants for purchase of Leases, &c.	2,237	6	6			
				229,342	12	5
„ Making Roads and improving the Estate				9,288	15	6
„ Amount paid as deposit on the purchase of the Harrington Estate (the Balance to be paid upon completion of Conveyance and Title)				6,607	10	6
„ Surveyors' charges				720	5	9
„ Parliamentary and Law Expenses				1,636	4	5
£				247,595	8	7
By Balance in hand to provide for the payment of the remaining amount of purchase money for the Harrington Estate and sundry Purchases of Land not yet completed, and also for a Reserve Fund				101,742	16	10
£				349,338	5	5

The above Balance consists of—	£	s.	d.
Cash at Bank of England	4,388	18	5
„ Coutts & Co.	4,123	9	6
Petty Cash	11	14	2
	8,524	2	1
Exchequer Bills £91,000, cost	93,196	13	9
	101,720	15	10
Advanced for Museum Building, to be repaid	22	1	0
£	101,742	16	10

March 6, 1856.

H. R. WILLIAMS, Financial Officer.

APPENDIX D.

CORRESPONDENCE between the TREASURY and HER MAJESTY'S COMMISSIONERS regarding the CONDITIONS on which the LANDS at KENSINGTON GORE are held by the COMMISSIONERS.

SIR, Treasury Chambers, February 15, 1853.

THE Lords Commissioners of Her Majesty's Treasury having had under their consideration the arrangements to be made between the Royal Commissioners of the Exhibition of 1851, and this Board, in relation to the purchases of land for carrying out the plan suggested in their Second Report, preparatory to the issues which will have to be made out of the grant of Parliament in aid of those purchases, I have it in command from their Lordships to transmit to you a copy of a minute which has this day passed their Lordships' Board on the subject, with their request that you will submit it to the Royal Commissioners, and communicate to me, for their Lordships' information, any observations which the Royal Commissioners may desire to make thereon.

I remain, &c.

Edgar A. Bowring, Esq. (Signed) C. E. TREVELYAN.

COPY of a TREASURY MINUTE dated February 15, 1853.

MY LORDS read the Second Report of the Royal Commissioners for the Exhibition of 1851, and advert to that part thereof in which the Commissioners refer to their resolution authorizing the outlay of a sum not exceeding 150,000*l.* of the Surplus Fund at their disposal in the purchase of land (including their first purchase), upon the condition that Her Majesty's Government would engage to recommend to Parliament the contribution of a sum of like amount towards the purchases contemplated in their Report, either for account of the Royal Commissioners, or for the joint account of the Commissioners and the Government, or for division between them, as might afterwards be determined.

My Lords read also the Resolution of the House of Commons, dated the 7th December 1852, that a sum not exceeding 150,000*l.* be granted to Her Majesty towards defraying, in the year 1852–53, the purchase of land at Kensington Gore for institutions connected with Science and Art, in aid of the funds already contributed thereto by Her Majesty's Commissioners for the Exhibition of 1851.

The Chancellor of the Exchequer states to the Board that the Royal Commissioners have entered into further arrangements for the purchase of land, on the faith of the understanding that such a grant as that made by the House of Commons would be recommended to Parliament; and as the period is now rapidly approaching when some part of this

grant will be absolutely required to complete the purchases in question, it has become necessary to settle the terms and arrangements under which such issues shall be made to the Commissioners, so as, on the one hand, to enable the Commissioners to pay the purchase-money, and, on the other, to secure for the Crown that superintendence and control which is always necessary when moneys are granted by Parliament for public purposes.

Mr. Gladstone informs their Lordships that he has been in personal communication with the Royal Commissioners on the subject, and he suggests that an arrangement of the following nature should be submitted to them for their consideration. If the Royal Commissioners shall concur therein, and shall express to this Board their readiness to adopt and act thereon, then Mr. Gladstone is of opinion that such sums might properly be issued from time to time, not exceeding on the whole 150,000*l.*, as may be necessary to enable the Royal Commissioners to pay for such lands as shall be purchased to carry out the plan and arrangements contemplated in their Second Report.

It appears to the Chancellor of the Exchequer that, in order to secure that unity of action which it is highly desirable to maintain over property purchased from various different parties, but intended to be applied to kindred objects, the legal title to the whole should be vested in the Commissioners to whom the lands already purchased have been conveyed; but he suggests at the same time that, for the purpose of securing to the Crown the right of general superintendence, it should be distinctly understood that the Commissioners should hold the whole of such purchases, as well those already made as those to be made hereafter, subject to such directions of appropriation as shall from time to time be issued by this Board in respect to such part, not exceeding one moiety, as shall, by agreement between this Board and the Royal Commissioners, be set apart for such institutions connected with Science and Art, as are more immediately dependent upon and supported by the Government from funds voted by Parliament; and subject also, with respect to the other part thereof, to such general superintendence by the Lords of the Treasury as may be necessary to secure that the appropriation proposed to be made, and all the arrangements in relation thereto as regards buildings to be erected thereon, shall be in conformity with some general plan, which shall be adopted as applicable to all parts of the property, whether such buildings shall be erected from public moneys, or by private subscription.

On the other hand, Mr. Gladstone thinks it should be understood that no buildings shall be erected at the public expense on any portion of the property, the whole of which will have been acquired for the public by the joint contribution, in equal moieties, of Parliament on the one hand, and of the Royal Commissioners on the other, without first giving to the

Royal Commissioners opportunity of submitting to this Board their objections, if any should occur to them, to what may be proposed in respect to such buildings, whereby a joint superintendence of a beneficial character would be secured for the public over the whole.

It further appears to the Chancellor of the Exchequer that it would be an additional advantage, should the Royal Commissioners see no objection thereto, if certain great Officers of State, viz., the Lord President of the Council, the First Lord of the Treasury, the Chancellor of the Exchequer, the President of the Board of Trade, and the First Commissioner of Works, were nominated *ex officio* members of the Commission; by which means facility of communication between the Government and the Commission would be established, and at all times maintained.

If it shall appear to the Royal Commissioners that these arrangements would not impede them in the discharge of their important duties, but would contribute to an harmonious action between them and the Government, then the Chancellor of the Exchequer thinks that, upon the expression of their determination to adopt and act upon them, and to concur in such measures as may be necessary for giving full effect to the proposed plan when the purchases shall have been completed, their Lordships would be fully warranted in making such issues out of the 150,000*l.* as might be applied for in the meantime.

SIR, Palace of Westminster, February 23, 1853.

I AM directed by Her Majesty's Commissioners for the Exhibition of 1851 to acknowledge the receipt of your letter of the 15th instant, transmitting, for the purpose of its being laid before the Commissioners, a copy of the Minute of the Lords Commissioners of Her Majesty's Treasury, in which their Lordships suggest, for the consideration of the Royal Commissioners, the arrangements which, in their opinion, it will be proper to adopt in relation to the purchases of land for carrying out the plan suggested in the Second Report of the Commissioners, preparatory to the issues which will have to be made out of the grant of Parliament in aid of those purchases.

Her Majesty's Commissioners direct me, in reply, to express to their Lordships their entire concurrence in the propriety of the several arrangements proposed in their Lordships' Minute, and their readiness to adopt and act upon them. They have accordingly, at their meeting held this day, elected the Lord President of the Council, the first Lord of the Treasury, the Chancellor of the Exchequer, the President of the Board of Trade, and the First Commissioner of Works, *ex officio* members of the Commission, in pursuance of the powers conferred upon them by their charter of incorporation.

I am further directed to state that Her Majesty's Commissioners will be prepared to unite with the Lords of the Treasury, at the proper period, in taking such further measures as may appear to be necessary for giving full effect to their Lordships' Minute.

I have, &c.,

Sir C. E. Trevelyan, K.C.B. (Signed) EDGAR A. BOWRING.

APPENDIX E.

CORRESPONDENCE between the BOARD OF TRADE and the TREASURY respecting the Establishment of the DEPARTMENT of SCIENCE and ART.

Office of Committee of Privy Council for Trade,

SIR, March 16, 1853.

I AM directed by the Lords of the Committee of Privy Council for Trade to request that you will inform the Lords Commissioners of Her Majesty's Treasury that my Lords have had under their consideration, by desire of the First Lord of the Treasury, the question of the best means of carrying into effect, so far as this Department is concerned, the announcement contained in the speech delivered from the Throne at the commencement of the present session of Parliament: "The "advancement of the fine arts and of practical science will be readily "recognised by you as worthy the attention of a great and enlightened "nation. I have directed that a comprehensive scheme shall be laid "before you, having in view the promotion of these objects, towards "which I invite your aid and co-operation."

Their Lordships understand that the object in view is to extend a system of encouragement to local institutions for Practical Science, similar to that already commenced in the Department of Practical Art; that the systems should be combined on an enlarged scale; and that arrangements should be made for furnishing, through the instrumentality of one Department in connexion with the Executive Government, having the support and being subject to the control of Parliament, the means for mutual co-operation and correspondence to every district of the kingdom where the local intelligence and energy of the inhabitants shall create schools of industrial science and art.

My Lords can have no hesitation in stating that the time has now arrived when the consideration of the important question of supplying scientific and artistic instruction to the industrial classes of this country in a more systematic manner than has hitherto been possible can no longer be postponed. The subject is one which assumes a more prominent position from day to day, and a recent and forcible expres-

sion of the public wants in reference to it will be found in the Surplus Report of the Royal Commissioners for the Great Exhibition of 1851. Their Lordships have therefore approached the consideration of that subject with a full appreciation of its importance; and I am now directed to explain the conclusions at which they have arrived as to the mode in which the proposed object may be accomplished.

With regard to what they find already effected in the direction above indicated, as evinced by the present extent of local exertions, my Lords direct me to point out that more than twenty of the principal cities and towns in the kingdom are already associated with the Department of Practical Art under their Lordships' superintendence; and from the communications which they understand have been addressed by deputations and otherwise to the Government School of Mines by places of great importance, such as Manchester, Birmingham, and Newcastle, their Lordships have every reason to believe that a cordial disposition will be shown to co-operate with the Government in promoting industrial science.

In the proposed United Department of Science and Art the motive power will thus be local and voluntary—the system, in the main, self-supporting; while the advantages will be distributed over every part of the United Kingdom; and the assistance received from Parliament be applied for the general good of all.

My Lords are of opinion that it will be necessary that, out of the existing materials, there should be formed a metropolitan establishment, where the most perfect illustrations and models in both branches may be accessible to students sent up from the provincial schools, to pupils resident in the metropolis and its neighbourhood, to training-masters, and to the public at large.

Connected with this metropolitan establishment there should be a school of the highest class, in which pupils may obtain the best instruction at the completion of their course of training, in which all improvements suggested by experience may be adopted and made generally known; and from which, therefore, the most useful information may at all times be communicated to the provincial bodies in connection with it.

In order to accomplish this end, it is essential that the institution should be supported to a considerable extent by the fees of pupils. It is desirable that the principal teachers in the metropolitan school, upon whose efficiency the whole working of the national system must, in a great degree, depend, should continue to receive from the State some moderate payment, and be directly responsible to the Executive Government. But if the metropolitan school were to be wholly sustained by a parliamentary vote, it might be regarded as an attempt on the part of the State to impose its own views of science and art, rather than as a

healthy and perpetually progressive exhibition of the state of advancing knowledge.

For the administration of the proposed department, it appears to my Lords to be necessary that there should be two persons, each filling the office of secretary and inspector combined; one for the Department of Science, the other for that of Art; with such clerks as may be requisite for conducting the correspondence.

The Lords of the Treasury will find that in the estimate which it is now proposed to submit to Parliament on behalf of the proposed department, although the task to be accomplished is of much greater magnitude than heretofore, my Lords have confined themselves as closely as possible within the limits of the estimates heretofore relating to the separate institutions which it is now proposed to unite into one; and that so far as the expenses of the establishment, as it will exist under the proposed consolidation, are concerned, they will exceed by only a small amount the aggregate of the several charges which have been voted in former years.

In conformity with the decision arrived at by the Government, my Lords have included in their estimate the following establishments, which it is proposed to unite in one department under the Board of Trade, and opposite to each of which are placed the sums voted for it in the past year, viz.:

	£	s.	d.
Government School of Mines and of Science applied to the Arts	800	0	0
Museum of Practical Geology	5,272	0	0
Geological Survey	5,500	0	0
Museum of Irish Industry	3,348	6	0
Royal Dublin Society	6,340	15	0
Department of Practical Art, including the Provincial Schools of Design	17,920	0	0
Total	39,181	1	0

To this sum, however, it is necessary to add some further expenditure which has already been sanctioned by previous Governments, although no provision for it was included in the votes, inasmuch as it is independent of any change in the present organization of these departments, and would in any case have appeared in the estimates for 1853–4.

As respects the Government School of Mines, their Lordships find that a sum of 150*l.*, which does not appear in the estimates for last year, was sanctioned by the Treasury under a former Government, for rent of rooms in Marylebone-street, for additional laboratory accommodation for both metallurgy and chemistry.

In the case of the Department of Practical Art, the outlay of sums amounting to 2,255*l.*, for the expenses of the establishment in managing the museum of manufactures, collection of ornamental casts, library, the

storekeeper's department, aid to teachers' training masters, the printing of the department, police, &c., has also been sanctioned by the late Government, and defrayed under their direction, and with the consent of the Treasury, out of the sum of 3,000*l.* voted last year, in two sums of 2,000*l.* and 1,000*l.*, for outfit, such as examples, books, &c., and for additional schools, &c., respectively.

Adding, therefore, the above sums of 150*l.* and 2,255*l.* to the sum of 39,181*l.* 1*s.* voted last year, as above shown, and supposing the estimates for 1852–3 to remain in other respects unaltered, it will appear that the present annual outlay on the establishments embraced in the objects of this letter may be stated to be 41,586*l.* 1*s.*

The salary which their Lordships are of opinion should be attached to the office of secretary and inspector in the Department of Science is the same as that which Parliament has already assigned to Mr. Cole for the corresponding office (hitherto called the office of General Superintendent) in the Department of Art, viz., 1,000*l.* per annum. This office it is proposed to confer upon Dr. Lyon Playfair, whose services the country is fortunate in securing for this important object.

In addition to this amount, a sum for Dr. Playfair's travelling expenses in visiting the provincial schools will be necessary; and as their Lordships are anxious that these visits should be not unfrequent, they propose that a sum not exceeding 350*l.* should be added for this purpose.

Some increase to the establishment now engaged in the Department of Art will necessarily be required for the additional correspondence entailed by extending to the kindred Department of Science the system of offering facilities for communication with the provincial bodies; but my Lords hope that a very moderate addition may suffice, and they would not propose to add to the estimate more than the sum of 300*l.* for this purpose.*

The three sums above mentioned constitute an addition of 1,650*l.* directly consequent upon the formation of the Department of Science and its consolidation with that of Art. This, if added to the sum of 41,586*l.* 1*s.* already spoken of, represents a total of 43,236*l.* 1*s.*, on the supposition that no other changes appeared in the estimates for the present year, as compared with those last voted by Parliament.

Of this sum more than one half was expended for provincial purposes, in the following manner, viz.:

	£	*s.*	*d.*
Provincial Schools of Design	7,870	0	0
Geological Survey	5,500	0	0
Museum of Irish Industry	3,348	6	0
Royal Dublin Society	6,340	15	0
Total	23,059	1	0

* There will, of course, be a small corresponding increase for postage and other incidental ...nses.

It should here be observed, that the sums derived in the shape of fees from students, &c., in the Department of Art, are to be counted in diminution of the actual and ultimate charge upon the public in connection with the metropolitan establishment. The amount of such fees, which was estimated in 1852–53 at 330*l.*, is estimated at 800*l.* for the ensuing year. This increase will, it is hoped, advance progressively with the development of the several purposes for which the Department has been founded.

Connected with the Museum in Jermyn-street, under the superintendence of Sir Henry de la Beche, the School of Mines and of Science applied to the Arts will continue to discharge its useful functions as the Metropolitan School of Industrial Science, with an enlarged sphere of usefulness from its new relation to the provincial schools; and as it is obviously desirable that the Secretary for Science to the general department should be well acquainted with the proceedings of the Metropolitan School of Science, my Lords propose that, Sir Henry de la Beche being Director of this school, Dr. Playfair, in addition to his other duties, should be its Vice-Director.

It is but justice to Sir H. de la Beche that he should no longer act gratuitously in the above capacity, but should, in addition to his present salary of 800*l.* as Director of the Geological Surveys, receive a due acknowledgment of his services as Director of the Metropolitan School of Science. It is therefore proposed to assign to him a salary of 300*l.* as such, making the total amount received by him 1,100*l.*

Before proceeding to the question of provincial aid, it is important to make a distinction in the case of that part of the estimate relating to the Metropolitan establishment, between what may be considered as annual and recurrent expenditure, and that which is rather of a temporary character, such as charges for outfit, examples of art, &c. The estimate for the Department of Art for last year contained, as already shown, a total sum of 3,000*l.* voted for such purposes. Their Lordships have mentioned that a considerable portion of this amount was expended under the sanction of the late Government upon charges which are in reality establishment expenses, being in their nature annually recurrent. It therefore appears, that as nearly the whole of the sum of 3,000*l.* voted by Parliament last year for outfit, &c., has been required for expenses of the establishment, a fresh vote for outfit, after providing for those expenses, would in any case have been necessary in the present year.

My Lords have therefore now to propose an outlay of the sum of 2,500*l.* as outfit, in the shape of additions to the Museum of Manufactures and Library at Marlborough House. Both of these branches of the Department of Art may be considered as still in their infancy. It is not proposed at present to increase the sum annually voted for the Museum and Library in Jermyn-street. The whole public will have the means of resorting to

these museums and libraries, whether they be resident in London or come from the country, in pursuit of science or of art.

All the sum at present applied to provincial purposes may be considered as being already devoted, by previous Parliaments, to those purposes, and it is not in their Lordships' power to deal with it as freely as if no existing arrangements depended upon its continuance. Their Lordships are, however, desirous of placing the present schools of design upon a footing at once more calculated to be useful for the purposes for which they were instituted, and less costly to the public in regard to the charge upon the estimates, and they will not fail to keep this object continually in view. Their Lordships propose that any future votes shall be applied for instruction only, and not in payment of any expenses of general management, which they consider ought to be wholly controlled by the local authorities, and therefore defrayed by them. The future extension of provincial aid, whether by means of an increase in the amounts now voted for specific application in the provinces, or the development of fresh means of aiding the provincial schools, rests upon a different footing to the present grants, and ought to be brought more particularly under the notice of the Lords of the Treasury.

Having given the fullest and most careful consideration to the question, my Lords have now to recommend for the United Department the grant of 4,500*l.* for the purchase of examples and apparatus, to be distributed, at half their prime cost, to provincial schools, and 3,000*l.* as a guarantee fund for salaries of masters, aid in training, and for scholarships.

If the above grants should be sanctioned, the total amount of provincial aid to be accorded to the two departments of Art and Science in the year 1853 will be as follows:—

	£	s.	d.
Provincial Schools of Design, Department of Art (This amount is less than that shown in the estimate for 1852–53 by 270*l.*)	7,600	0	0
Examples, &c., for Provincial Schools* -	4,500	0	0
Guarantee Fund, &c. - - -	3,000	0	0
Total	15,100	0	0

(N.B.—The above figures are, of course, exclusive of the grants to the Royal Dublin Society and the Museum of Irish Industry.)

In illustration of the public feeling and the public wants in respect of the proposed union of the several establishments devoted to science and art, may be cited the case of the Potteries School of Design, where, at the annual meeting recently held, it was considered expedient that a

* The examples being sold at not less than half price, the actual expenditure cannot exceed 2,250*l.*

School of Industrial Science should be added to the existing School of Art. It is probable that a similar feeling exists in many other of the present local Schools of Design, and that it would shortly find public expression in the various localities, quite irrespective of any proceedings on the part of Parliament for the promotion of industrial instruction.

The natural consequence of this union will be to render available for the double objects of science and of art those grants, which are now confined to the latter branch exclusively, and thus to produce a much greater effect without any corresponding increase of charge.

With regard to the arrangements necessary for the transaction of the financial business of the united department, and for ensuring the proper distribution of the sums that may be voted by Parliament, their Lordships propose to exercise a direct control in this respect, the accountant now employed by the Board of Trade appearing to them to be the proper person for superintending the general system of the accounts of the department, as respects not only the expenditure, but also such receipts as may accrue in the shape of fees from occasional students, or in any other manner. My Lords conceive that, in compliance with strict rule, the gross sum required for the purposes of the department should be voted; any sums which may be received in repayment being paid directly to the Exchequer. These sums are a deduction from the real cost of the Department, and the amount received for the year last past will be stated in a note on the face of the estimate.

My Lords do not think it desirable now to enter upon the question of the several alterations in the estimates for the ensuing year as compared with the preceding estimates, as the nature of those alterations will be seen by reference to those estimates, and to the explanations by which they will be accompanied.

As respects the sum proposed above to be voted for the distribution of examples, apparatus, &c., my Lords direct me to mention, that under that head will be included in the Department of Art, models and copies, which the department now provides at an expense so small in comparison with that at which they used to be sold, that Mr. Cole reports that sets of copies and models may now be obtained at about one fourth of the price which they bore a few years since. It had been the practice to distribute such copies and models gratuitously; but this system was, as their Lordships think, very judiciously altered by the late President of this Board, who announced the intention of the department to supply hereafter (so far as the vote would permit) all local schools at half cost.

My Lords consider that however necessary the system of gratuitous distribution may have been at first, it is quite sufficient that the models should eventually be furnished at the actual cost price; and they would advise that the present allowance should only be continued for a limited period, and that as soon as possible twenty-five per cent. discount only

should be allowed, and that ultimately all charge upon the estimates under this head should entirely cease.

It is proposed that similar principles shall govern the distribution of apparatus, &c., in the case of the Department of Science.

As respects the proposed expenditure for a guarantee fund for teachers, training masters, scholarships and prizes, that outlay is intended, in both the Departments of Science and of Art, as an encouragement towards establishing provincial schools, and also to furnish young men educated in those local schools, and found to be meritorious, with means and inducement to finish their training at the metropolitan schools. This mode of stimulating local talent is open to no abuse, so long as it is confined within moderate limits, that is, so long as the main support of the metropolitan schools is derived from the fees of the pupils resorting to them for instruction. The honour of being elected to these scholarships, combined with the means which they will afford for improvement in science and art, may be expected to prove a great incentive to the ambition of the pupils.

It is found very useful that this Board should be able to guarantee to a master who is about to open a school in a new district a certain income at starting; and upon this system my Lords propose to act to the extent shown by the vote proposed in the shape of the guarantee fund to teachers, not in order to make an actual contribution, but only to guarantee a sum which they are led to believe the fees for instruction will wholly or nearly supply. It may therefore be expected that this will not constitute any very serious charge.

It was arranged by the late Government that, as respects the Department of Art, exhibitions of the works of the students of all the schools, metropolitan and provincial, shall be held in London in the months of May and November; and that prizes shall be awarded for proficiency in the several stages of instruction. The President of the Royal Academy, and Mr. Maclise, R.A., were good enough to assist Mr. Redgrave in the distribution of the prizes at the first exhibition, which was held in May last. The expenditure under this head will not be more than 350*l.*

Although their Lordships cannot doubt that the public utility of the Museum of Practical Geology, as respects the practical means of instruction and training which it affords, will, under the arrangements proposed in this letter, be considerably greater than has hitherto been the case, they are far from being insensible to the advantages already offered by it. It embraces a large and well furnished museum, which is constantly being augmented by liberal donations from the public. It includes not only raw mineral produce, but also numerous mining models and metallurgical illustrations, and extensive collections illustrative of the progress of the geological survey, as well as the higher applications of mineral products to the arts. Connected with it are the geological surveys of the United

Kingdom,* and these are used in combination with the Government School of Mines and of Science applied to the Arts, to which my Lords have referred under the name of the Metropolitan School of Science, as a means of practical instruction. The pupils of the school go under the respective professors into the field, where they are practically taught geological surveying, mining, and natural history. This advantage of actual field practice gives a peculiar and important feature to the central school, which might be so arranged as to be extended to those pupils who might be sent to it from the schools in the provinces. In connexion with the Museum there is also a Mining Record Office, which is open for consultation by the public, and contains records of the state of mines in the most important mining districts; and my Lords feel assured, from the desire already evinced by the public to avail themselves of the advantages proposed in the establishment of that office, even in its present imperfectly developed state, that much benefit would ensue from its being made of that greater practical utility which would result from the contemplated modifications in the department. Lastly, there is the educational part of the establishment, which was originally instituted as a school of mines, in consequence of numerous memorials from the mining districts, but which has lately extended itself so as to embrace instruction in science applied to the arts. The important practical bearing which the objects of this school have upon the promotion of the science of agriculture in this country also requires a special reference, the applications of geology under it extending to agriculture equally with mining and the arts Besides the regular courses of the institution, it has been the custom of the professors to deliver special courses of lectures to working men at a very small fee (viz., sixpence for six lectures); and these lectures are so much appreciated by the class to which they are confined, that the number desirous of attending each course has ordinarily been double the number which the theatre will contain.

With regard to the Royal Dublin Society, which it has been decided shall be included in the estimates prepared under the proposed new arrangements, my Lords have only to observe, that in addition to its staff of professors lecturing in Dublin, it is in the habit of sending lecturers into the Irish provinces upon the application of the various towns, and that it has actively participated in organizing the scheme of the Great Exhibition which it is intended to hold in Dublin this year.

There still remains one establishment included in the estimates for the forthcoming year which my Lords have not yet specially alluded to, viz., the Museum of Irish Industry, which is under the direction of Sir R. Kane, so distinguished for his services in the cause of science.

* It is very important to bear in mind that the expenses incurred on account of the Geological Surveys, and which now amount to 5,000*l.* a year, are not permanent in their character, and will ultimately cease to be a charge upon the public.

It does not appear necessary for my Lords to dwell upon a consideration so obvious as that of the mutual benefit that would result, in all that relates to questions connected with instruction, from the proposed union, under this department, of the interests of these establishments which bear such especial reference to the progress of Ireland in the paths of science.

At present the permission of Her Majesty enables the rooms of Marlborough House to be used temporarily for the offices of the department, the Museum, &c. and my Lords have to acquaint the Lords of the Treasury that Her Majesty has also been graciously pleased to allow Dr. Playfair to have the temporary use of offices in that building for the discharge of his duties in London.

It appears to my Lords probable that the new arrangements now proposed will not entail upon the country an unprofitable expenditure, even as regards the machinery already in existence and sanctioned by Parliament, and that they will in some respects be a source of economy; and they would direct attention to the following instances of the advantages which have already resulted from the system which it is proposed to extend.

A large number of examples, illustrations, &c., voted for the Schools of Design in former years, but either stowed away in the vaults of Somerset House for want of space, or otherwise practically useless, have been brought into use to the value of several thousand pounds. These include casts of ornamental art of all periods, copies of Raffaelle's Loggie, specimens of manufactures, &c.

The current expenses of management of the Museum at Marlborough House have already been defrayed by the fees from occasional students taken at the door, although the institution has only been open six months, and although the public are admitted gratuitously two days in the week. The whole number of persons admitted has been about 60,000.

It has already become the practice for individuals, desirous of encouraging the general improvement, to send to the Museum of Art, for temporary exhibition, articles of interest that are their own private property. This is a source of wealth to a public institution, which can only exist to any considerable degree when, from the national character of the institution, an ambition to extend its usefulness is naturally engendered in the public mind. The example set by Her Majesty, and by His Royal Highness Prince Albert, and already followed by several individuals, may probably be acted upon more and more, as the advantages of the institution become more generally appreciated by the possessors of interesting works in science and in art.

My Lords would specially observe that the systematic combination of all the provincial institutions, through the instrumentality of the metro-

politan branch, will cause the improvement of one school to be made known immediately to all; and the utmost opportunity for constant progress will thereby be afforded to the general body; while, at the same time, an honourable rivalry will be generated throughout all the separate sections of the system; from the combination of which causes the greatest industrial benefit may be expected to result.

Their Lordships have now touched upon the various points which have seemed to them more especially to require an explanation on their part, previous to the Estimates for 1853–4 being laid before Parliament. It is only after the most careful and deliberate consideration of the whole question, and the important results involved in it, that they submit for the consideration of the Lords of the Treasury the various proposals contained in the present letter, being of opinion that an arrangement of the nature of that which they have now explained is especially calculated to promote the object had in view by Her Majesty, in the recommendations made in her gracious speech at the commencement of the present session of Parliament.

I am to request that you will move the Lords of the Treasury to favour my Lords, at their earliest convenience, with an expression of their opinion in reference to this important subject, and to the several arrangements contemplated in this letter.

I have, &c.

James Wilson, Esq., M.P., &c. &c.

(Signed) J. Emerson Tennent.

Treasury Minute on the above Letter.

Write to Sir Emerson Tennent, and inform him that my Lords have had under their consideration his letter of the 16th instant, detailing at some length the views of the Lords of the Committee of Privy Council for Trade, as regards the question of "extending a system of encouragement to Local Institutions for Practical Science in this country, similar to that already commenced in the Department of Practical Art, and the arrangements necessary for furnishing, through the instrumentality of one department of the Executive Government, the means for mutual co-operation and correspondence to every district of the kingdom, where the local intelligence and energy of the inhabitants shall create schools of Industrial Science and Art;" and submitting the expediency of blending into one Estimate the charges hitherto stated separately to Parliament under the heads of "Geological Survey and Museums of Practical Geology, London and Dublin;" and "Practical Art Department, including Schools of Design." Request Sir E. Tennent to inform the Lords of the Committee that their Lordships concur generally in the plans proposed in this letter as the most effectual means of giving

effect to the recommendation of Her Majesty at the opening of the session, with a view to the advancement of "Practical Science."

My Lords concur in the remarks of the Lords of Privy Council for Trade, as to the best mode in which the efforts of Government can be directed, with a view to the encouragement of Local Institutions for Practical Science; they agree that that object will be best attained by the creation in the metropolis of a school of the highest class, capable of affording the best instruction and the most perfect training, which can alone be hoped for from an institution which has the command of the most eminent and distinguished talent; the advantages of which will be experienced by minor institutions throughout the kingdom, not only as furnishing a central source of information, but as a means of furnishing competent and well-qualified teachers for Local Institutions, and of completing the education of pupils who desire higher accomplishments than can reasonably be expected from minor schools.

And my Lords entirely concur with the Lords of the Committee of Council for Trade, that it is desirable to leave the management of such local institutions as much as possible to the authorities on the spot, confining their direct support mainly to affording facilities and aid in obtaining suitable and accomplished teachers, and the necessary apparatus and instruments of the most approved description, so essential to the success of such institutions, and generally by affording advice and assistance from time to time, based upon the extended experience which the Central School must enjoy; and which will give it the character rather of a national than a mere metropolitan institution.

But while my Lords fully concur with the Lords of the Committee of Trade as to the great utility of such institutions, and are ready to admit that Parliamentary Grants could not be sanctioned for more useful objects than those contemplated in their Lordships' letter, immediately connected as they are with the success of our various industries, and calculated as they are to aid in the competition to which those industries will be more and more exposed in the great neutral markets of the world, and in the development of the numerous natural resources of the country, and especially those of Mining and Agriculture,—yet my Lords concur in the views expressed by the Lords of the Committee of Trade, that every means should be used to render these institutions as much self-supporting as possible, and that, in the plans adopted, that object should always be borne in mind. My Lords adopt this view, not only because they feel it incumbent upon them to confine the public expenditure to the lowest limit, but also because they entertain a belief that the utility of such institutions is great in proportion as they are self-supporting.

Request Sir E. Tennent to inform my Lords of the Committee that they entirely concur in the proposed arrangement, which will unite in

one department, under the Board of Trade, with the Departments of Practical Art and Science, the kindred and analogous institutions of the Government School of Mines and Science, the Museum of Practical Geology, the Geological Survey, the Museum of Irish Industry, and the Royal Dublin Society, all of which are in part supported by Parliamentary Grants; and my Lords have given directions that the estimates for all these institutions shall be brought together under the general head of "Board of Trade Department of Science and Art." From this arrangement, by which the whole of these institutions will be brought under one common superintendence, and by which the advantages of each may be in some degree made to contribute to the success of the whole, my Lords anticipate much public benefit.

APPENDIX F.

Statement of the Reasons which led to the Transfer of the Royal College of Chemistry to the Department of Science and Art.

Previous to the year 1845 there had existed in England little or no facility for systematic laboratory practice. A knowledge of the science of chemistry was every day increasing in importance to the agriculturist and the manufacturer, to enable them to compete successfully with nations in advance of us in this respect, and to the public at large, who were awakening to the necessity of this knowledge as a part of general education. But the chemical student, notwithstanding the existence of certain laboratories in this kingdom, felt it necessary to travel to the Continent, and found that the teaching and practice of foreign laboratories compensated him for the expense, the difficulty, and the inconvenience of a residence abroad. The Royal College of Chemistry was designed to supply this desideratum, and in July 1845 it was first established by the appointment of a Council, with power to add to their number, and of certain executive officers, under the control of the Council.

The first object was the appointment of a Professor, and the promoters of the institution were fortunate in securing the services of Dr. Hofmann, a distinguished pupil of Baron Liebig, and of rising reputation as a scientific chemist throughout Europe. It was mainly through the influence of His Royal Highness Prince Albert, who had graciously consented to be named President of the College, that certain obstacles to this object were overcome.

The Council, anxious to make a commencement, fitted up temporary laboratories in George Street, Hanover Square, and here, in October

1845, the laboratory practice was commenced, and upwards of twenty pupils enrolled themselves within a week of the opening of this Practical School of Chemistry.

The next object was to obtain suitable and permanent premises for the College and laboratories. Such were met with in Hanover Square, having the advantages of a good position, all necessary official accommodation for the College, the residence of the Professor and Secretary, and especially that of a large piece of ground, with a frontage on Oxford Street, on which convenient and well-arranged laboratories might be built. These premises were accordingly taken; and after obtaining the opinions of the most eminent architects and chemists on the best plan of laboratory, both for economy and convenience, the Council finally decided on one in which they felt satisfied those ends would be obtained, and the first stone was laid by His Royal Highness Prince Albert on the 16th June 1846.

With the completion of these laboratories the difficulties of the College commenced. The building fund, to which contributions at first came in very rapidly, eventfully fell short of the actual expenditure by 2,112*l.* At the same time the payments exceeded the receipts on the general account of the College, and the annual subscriptions declined, partly owing to the monetary crisis of 1847, and partly to the dissatisfaction of some of the early supporters of the College at the non-fulfilment of promises of privileges to members, as yet impossible; and, notwithstanding increased receipts from the students' fees, the Council became more and more embarrassed. A heavy debt was thus incurred; and although much forbearance was shown by the chief creditor, the Council felt the importance of relieving the College from its liabilities, and at considerable personal sacrifice succeeded in doing so. They determined on a *pro rata* contribution among themselves, and twenty-eight of the thirty-six Councilmen, including some of the Vice-Presidents, subscribed each 50*l.*, either as a loan or a gift. The Council stated in their Report, that these difficulties, together with the full occupation of the Professor's and Assistants' time by the flourishing state of the school, fully account for the failure of certain personal privileges, of which promises had been held out to members in the original proposals for the establishment of the College, and among which was the analysis of substances sent in by subscribers. While they were confident in the future prosperity of the institution, they yet felt it necessary to submit to the general meeting certain resolutions, calculated to reduce the annual expenditure, which were adopted by the meeting. The substance of these was that the operations of the College be strictly confined to practical instruction in the laboratories, and to lectures and researches calculated to advance the science, and that it should be restricted to the laboratories and area behind the house. This would enable them to carry on the schools with

1,000*l* per annum, of which they could calculate on 650*l*. from students' fees, the remaining 400*l*. being looked for from the friends of the institution. The house in Hanover Square was let at an annual rent of 250*l*.

From the commencement to the year 1851 the annual reports show a steady increase in the prosperity of the school, especially in the students' fees, and the working hours of the students. In 1850, although the Council reported that the school had never been more prosperous, and that the fees exceeded in amount any previous year, it was though advisable still further to reduce the expenditure by the abolition of the office of paid Secretary. In the next year, 1851, the subscriptions showed a slight increase; but the fees, the most important source of income, were considerably less,—a fact which was perhaps partly owing to the opportunity offered by the Great Exhibition for study, and the acquirement of much valuable knowledge. In 1852 the report shows a further decrease in the amount of fees, and the subscriptions also fell off. This Dr. Hofmann ascribed chiefly to the establishment of several other chemical laboratories in London, and to the introduction of chemistry as a part of general education in schools. Notwithstanding this fluctuation,—a fluctuation which might have been expected as the result of reaction and other causes, and which would not affect the future prosperity of the institution,—the laboratory practice continued to be carried on most successfully, and a large number of valuable papers were contributed by the pupils, first to the Journal of the Chemical Society, and afterwards issued in a connected form by the College. The two volumes of Researches issued by the College form a valuable testimony to the success of the institution, a result mainly due to the ability and zeal of its Professor His lectures (recognized by the Apothecaries' Company) were commenced in the summer session of 1847, and delivered at first twice a week, but subsequently thrice a week, and so continued to the last session of the College in the summer of 1853. They have afforded an opportunity of bringing before the students in a connected form the several branches of chemical science not altogether suitable to the laboratory, and of showing a variety of experiments proper only to the lecture-room. In 1850, and again in 1851, the Royal Society placed at Dr. Hofmann's disposal a sum of 100*l*. towards the furtherance of a series of experiments on vegetable alkaloids, and the Professor was requested by Government, in three successive years, to undertake important investigations. In 1850, with Professor Thompson of Glasgow and Professor Graham of University College, he conducted an inquiry into the manufacture of sugar; in 1851, with Professor Graham and Professor Miller, he made analyses of the different waters around London, with reference to the water supply of the metropolis; and in 1852, with Professor Graham and Professor Redwood, he was engaged in the settlement of a dispute between the Board of Inland Revenue and the exporters of beer.

The year 1853 brings us to the transference of the lease and fixtures of the College to the Department of Science and Art. The following extract from the Annual Report of the Council will best explain the causes which induced the Council to propose this to the members :—

EXTRACT from the Report of the Council at the Annual General Meeting 26th July 1853.

Allusion was made in the last Report to the hampered condition of the College, in consequence of the want of a proper lecture room, in which the Professor might give a systematic course of lectures on chemistry applied to the arts. Mention was also made of certain impediments in the way of building such a theatre in the open space at the back of the College, even were the necessary funds at the disposal of the Council. Although these impediments are now removed, by the courtesy of Mr. Malcolm and the proprietors of the adjoining property, and although the Council can for the first time during the existence of the College announce that it is free from debt, yet they can hold out no hope to the members that sufficient funds could be collected to enable them to erect the long-desired and much-wanted theatre. Had the necessary permission to build been granted at an earlier period, the result might have been different, as among the supporters of the College there were many at that time willing to subscribe large sums in futherance of that object. Reflecting on these circumstances, and the various ameliorations in the system of education which are now being adopted in our Universities and other educational establishments, the Council came to the conclusion, that rather than leave the College in its present isolated state, they would best consult the enlightened views of the members if they were to bring the College into connexion with the more extended scheme contemplated by the Government, and thus not only render the College more useful, but perpetuate its influence in the diffusion of that noble science whose study it has so greatly promoted. While an application to the Board of Trade on this subject was under discussion, a proposal was made by the Director of the 'Metropolitan School of Science' (Sir Henry de la Beche) to our Professor, that he should accept the chair of chemistry in that institution, vacated by Dr. Lyon Playfair. On the announcement of this event to the Council by Dr. Hofmann, who, on this occasion, as on all others, has shown a readiness to sacrifice his own interests to the interests of the College, the Council felt that they could not do otherwise than advise him to accept a position so favourable to himself, and one in which his zeal and ability might be made more available for the advancement and diffusion of the science which their Society had been destined to promote. The same considerations induced them at once to enter into negotiations with the Board of Trade, and they addressed the following letter to the Right Hon. Edward Cardwell, President of the Board:

SIR,

THE Council of the Royal College of Chemistry have been informed by their Professor, Dr. Hofmann, that he has been appointed Lecturer on Chemistry to the Government Metropolitan School of Science. They are, in consequence, called upon to consider what steps they should adopt, and it is now on their behalf that I am requested to make you the following communication:—

The Royal College of Chemistry was established in the year 1845, for the purpose of introducing amongst us a more systematic study of chemistry, by actual laboratory practice, than had hitherto prevailed in this country. Although certain laboratories, more or less efficient, existed thoroughout the kingdom, it had still been deemed necessary by numerous chemical students to resort to the continent for the purpose of profiting by what they considered so superior a system of laboratory teaching as to repay the expense of the journey, the inconvenience of a foreign residence, and the difficulties of a strange language.

The want of a similar system of instruction in this country being thus practically manifested, the promoters of the College of Chemistry established that Institution, and were fortunate in securing for it the services of Dr. Hofmann, one of the most distinguished pupils of Baron Liebig.

Under Dr. Hofmann the College has been eminently successful, and, notwithstanding certain pecuniary difficulties, naturally incident to a nascent institution of so novel a character, the pupils regularly increased, and have varied in numbers from thirty-six to fifty. Since the establishment of the College, and partly in consequence, it may be presumed, of its success, other laboratories have been founded in London, and amongst these is one attached to the Government School of Mines, now the Metropolitan School of Science, and it is to this that our present Professor, Dr. Hofmann, has been appointed.

The laboratory of the Metropolitan School of Science has been for some time inadequate to the number of the pupils who desired to enter, and, as we learn from the printed estimates of 1854, temporary accommodation has been provided in a building in Marylebone Street; but it has been stated to the Council that the lease of these premises extends to little more than two years beyond this term, and that, even now, larger and more efficient laboratories are requisite for the increased and increasing numbers of the Central School.

It is, therefore, manifestly impossible for the Government to accommodate within its present laboratories the additional pupils of the College of Chemistry, who have begun their studies under Dr. Hofmann, and are equitably entitled to complete them under his superintendence. The Government will hardly consent to deprive them of so important an advantage; nor can it be considered desirable that Dr. Hofmann should divide his allegiance between two distinct institutions.

The Council, having maturely weighed these circumstances, are of opinion that they would best fulfil the objects for which the Royal College of Chemistry was founded if they were to recommend the body of subscribers to place at the disposal of Government the present buildings, together with the furnaces and fixtures which have been from time to time provided in conformity with the latest improvements of laboratory practice. The value of the laboratories erected by them, including furnaces and fixtures, is estimated at 3,000*l.*, the premises being held by them on a lease of sixty years, of which fifty-one are yet unexpired, at the low rate of 130*l.* a year.

The only conditions which the Council would recommend the subscribers to the College to attach to the transfer are the following:

1st. That the Government should take an assignment of the lease of the College buildings.

2d. That the Government pay a sum of 350*l.* to the present Council of the College, this being the amount of liabilities incurred during the present year, for the salary of the Professor, &c., which cannot be liquidated in the usual way by annual subscriptions, in the event of the transfer being effected.

3d. That in the event of the Government selling the bare fixtures and furnaces of the Royal College of Chemistry, the sums thus realized, after deducting the above advance of 350*l.*, should be devoted to the purposes for which the Royal College of Chemistry was established, viz., to the promotion of practical chemistry. It will be necessary that this condition should be recorded in the deeds of transfer; but the Council would leave the appropriation of this sum, in the spirit indicated, to the discretion of the Government.

If you approve of the transfer of the Royal College of Chemistry to the Board of Trade Department of Science and Art, on the above conditions, the Council will immediately summit them to the consideration of the subscribers, and they do not doubt but that they will be ratified by that body.

I beg to add, that in tendering this offer to the Government the Council have no other object now, as they had no other object on the occasion of the original institution of the College, but the advancement and extension of practical chemistry.

They might at once, without difficulty, dispose of their lease, and apply the surplus remaining after the discharge of their trifling liabilities, according to any plan which, with the sanction of their subscribers, it might please them to adopt; but regarding the inadequate provisions of the Government for the education of the pupils of the School of Science and Art, and considering the interests of the pupils of the College of Chemistry, for the completion of whose education no provision at all has as yet been made, the Council cannot but think that they would best

consult the objects contemplated by the founders of the institution which they represent by proposing to place their property at once, on the conditions above stated, in the hands of the Government.

I have, &c.

(Signed) ASHBURTON,
Chairman of the Council of the
Royal College of Chemistry.

At a special general meeting held the same day, the above proposal was sanctioned, and Sir James Clark, Bart., Dr. Daniel, and W. Tite, Esq., were appointed a committee to wind up the affairs of the College. The accompanying statistical table will show that the Institution had entirely recovered during the last year from the stagnation of the two previous years, and that the sessions of 1852 have been far more prosperous, and that especially the last session, in the summer of 1853, was one of the most successful ones, since the establishment of the College.

At the time this offer was made, the Metropolitan School of Science applied to Mining and the Arts much required additional laboratory accommodation. The Treasury had sanctioned, in the preceding year, the lease of premises in Marylebone Street for temporary laboratories, and about two years had still to expire, the annual rental being 150*l*. Part of these premises was used as a Metallurgical laboratory, and the other part, destined for the Chemical laboratory, had not yet been fitted up, and would besides afford very inadequate accommodation to the increased number of students, while it could be most usefully employed for other purposes. While recommending the proposal to the consideration of the Lords of Her Majesty's Treasury, the Lords of the Committee of Privy Council for Trade fully kept in view that principle of the department which avoids interfering with independent action, and encourages to the fullest possible extent self-supporting institutions. The explanations in the letter from the Council of the Royal College of Chemistry showed that in accepting its terms they would not infringe that principle, while, at the same time, they would obtain ample accommodation at a less rental than that paid for the premises in Marylebone Street, and not only save the amount still unexpended in fittings for the latter, but further sums which must have been necessary. It was also arranged, that, in the event of the offer being accepted, it should be no source of further annual expenditure to the Government beyond the rental and the cost of fuel and gas, to which the Chemist would have been entitled had he continued in the laboratory in Marylebone Street. All charges of the laboratory would be paid by him, and it would prove, in fact, a source of income to the Department, by the following condition, viz., that after the Chemist should have obtained 500*l*. clear profit from the laboratory, one moiety of all further profit should be paid over to the Department, in order to enable meritorious students to receive the advantage of gratuitous instruction in

the laboratory. These facts having been submitted to the Lords of Her Majesty's Treasury, they were pleased to authorize the acceptance of the offer made by the Royal College of Chemistry, and the transfer has accordingly been made.

APPENDIX G.

Prospectus of the Newcastle Trade School.

Our elementary schools in this country are universally confined to the rudiments of education, and do not convey to their pupils that knowledge which is necessary to give them a rational acquaintance with their every-day occupations.

The proper understanding of the principles on which trades and manufactures are carried on is becoming every day more and more a necessity of this country. The improvements in transit, both by sea and land, have taken away many of the local advantages of a district, and its mere possession of coal and iron does not prevent other localities, not having them, or even other countries, from entering into competition with it. The competition in industry is thus no longer a rivalry of mere local advantages, *but is resolved into a competition of intellect.* Manual labour is becoming of less value, while there is a constantly increasing demand for skilled or intellectual labour.

The trade department of the Clergy Jubilee School has been established with a view of giving to its pupils a higher education than the elementary schools; or, in other words, its object is to carry on the instruction given in the latter to an extent which will enable the pupil to have a rational understanding of his every-day occupations.

No attempt will be made in this school to teach the *practice* of the workshop; all that will be taught are the *principles* upon which the work proceeds. The knowledge of the principles will, however, lead to a much more speedy attainment of the practice; while the youth possessing this knowledge will be enabled to fulfil the duties of the position in which God has placed him, by acting as a rational and understanding being, instead of carrying on his work in a blind habit of "rule of thumb" experience.

As this is the high aim of the Newcastle Trade School, its instruction will not be limited to the mere teaching of the principles of trade or manufactures. It will give, in the ordinary branches of education necessary for all men, a more thorough acquaintance on each subject than it has been possible to give in the elementary preparatory schools. No boy will be admitted to the school unless he can read and write tolerably, and has a fair acquaintance with the first three rules of arithmetic.

Reading and writing will still continue to be objects of instruction in the school; but the first will be taught through books affording useful knowledge in science, history, and literature; and the second, by dictation, letter writing, and book-keeping.

History and geography will also form important subjects of instruction, though they will be carried further than in the elementary schools. Besides a thorough knowledge of political geography, physical geography (which shows how God fashioned the earth into seas and continents, mountains and plains, lakes and rivers, and how they are refreshed by rains, winds, and seasons) will be especially taught.

The science of numbers will receive much study. Arithmetic, in all its branches, will engage more than usual attention, and will be carried on to algebra and mathematics. The master of the school is well versed in these sciences, and, as they form the basis of the mechanical and commercial trades, they will be fully taught.

The application of the knowledge thus acquired, to an elementary acquaintance with the laws of physics and mechanics, and, subsequently, probably of chemistry, will be brought before the pupil. Free hand and mechanical drawing, vocal music, &c., will also form part of the instruction for all the pupils of the school. Appliances for gymnastic exercises will be put up in the playground. The working of the telegraph will also be taught.

These branches of instruction are of common importance to all in their general application to the every-day purposes of life. But there are special applications of them to separate branches of industry, which will be imparted to particular classes, when they have attained the general elementary knowledge. The occupations of this district may be mainly divided into mining, navigation, surveying, mechanical, building, chemical, and commercial trades, and, for each of these, special exercises and applications of the general subjects of the school will be given, when the trade of the pupil is known. The importance of this will be obvious in its immediate practical consequences; but it is of value, also, in accustoming the pupil to apply his school knowledge to the useful progress of his future occupation.

As it is desirable that these practical applications of a general scientific knowledge should become a distinctive part of the school, it is hoped that the parents of the pupils will allow them to remain sufficiently long to benefit by instruction in them. With a view to promote this object, it is proposed to establish scholarships in the school, to be given to the most meritorious pupils, in order to pay their fees for another year, and enable them to purchase some useful instruments or books.

APPENDIX H.

Papers respecting the Birmingham and Midland Institute.

I.—Correspondence between the Institute Committee and Her Majesty's Commissioners.

Committee Room, Philosophical Institution Buildings,
Sir, Birmingham, 10th March 1853.

The Committee appointed to organize in Birmingham a new Scientific Institution request you to lay before the Royal Commissioners for the Exhibition of 1851, the enclosed outline of the plans it proposes to adopt, being desirous to ascertain how far such plans may be considered to fulfil the essential requirements of an Industrial Institute. The Committee is also anxious to learn what steps are likely to be taken in the establishment of the Great Central Industrial College, by which the vigorous and successful working of local Institutes may be promoted.

I am, &c.

(On behalf of the Committee)

To the Secretary of the Royal Commissioners for the Exhibition of 1851.

Wm. Matthews jun., *Hon. Sec.*

Proposed Birmingham and Midland Institute.

It is proposed to establish a new Institute in Birmingham, upon a comprehensive plan, for the promotion of Practical Science, Literature, and the Arts, of which the following is a general outline.

The Institute shall consist of two Departments. The first or general Department being designed to afford facilities in obtaining scientific information to the inhabitants of the town and neighbourhood, by means of periodical Lectures and a good Scientific Library. In furtherance of this object it is intended to establish an extensive Geological Museum which will especially illustrate the Mineral resources and Palæontology of the District, a Model room for Machinery, Furnaces, sections of Mines, &c., a spacious Hall for the Exhibition of Manufactures, and if possible, a Public Gallery of Fine Arts. In connection with this Department, it is intended to hold periodical meetings for the reading and discussion of original communications on scientific subjects. The other Department to be an Industrial Institute, or in other words, a School of Science applied to the Arts, for Artizans, the members of which will partake of the more essential advantages of the first department, in addition to various class instruction and weekly progressive lectures on the different branches of science, with especial

reference to the requirements of the town and neighbourhood: these, which may be termed the elementary lectures, will include mechanics, metallurgy, mineralogy, geology, chemistry as applied to the various manufactures and agriculture, ventilation of mines, and mining engineering. The education of our artizans, practical miners, and others, in the scientific principles of their daily occupations will thus become a primary object of the institute, the importance of which is universally recognized.

SIR, Palace of Westminster, March 17th, 1853.

I am directed by Her Majesty's Commissioners for the Exhibition of 1851, to acknowledge the receipt of your letter of the 10th instant, submitting, for the consideration of the Commissioners, the outline of the plan proposed to be adopted by the Committee appointed to organize a new Scientific Institute in Birmingham.

Her Majesty's Commissioners direct me to acquaint you in reply, for the information of the Committee, that they have received this communication with the greatest interest, as they are fully sensible of the value to a large manufacturing town like Birmingham, of any institution which may serve to communicate to artizans in a systematic manner the principles of science, upon which their respective industries are based, with especial reference to the requirements of the town and neighbourhood.

The Commissioners perceive from the plan submitted by you, that it embraces a literary and philosophical institution on the one hand, and a school of science for artizans on the other, together with a museum which will especially illustrate the mineral resources and palæontology of the district, a model room for machinery, furnaces, sections of mines, &c., a spacious hall for the exhibition of manufactures, and, if possible, a public gallery of Fine Arts, all of these being common to both departments of the institution, and available for the purposes of instruction as well as for scientific investigation.

The Royal Commissioners trust that they correctly understand the proposed plan, when they believe it to comprehend a systematic School of Science, and not merely an institution for the delivery of occasional and unconnected series of Lectures on different subjects. They are fully convinced of the great value, not only to the local interests of Birmingham, but also to the general interests of Science, of such a museum as the one which you propose to establish, especially when used for the purposes of instruction; and they feel assured that such a museum, employed to illustrate a systematic course of study, will be of the greatest importance to the artizans of Birmingham, and will ultimately form a source of economy and profit to the productive powers of the neighbourhood generally.

Her Majesty's Commissioners have been informed that there is at this moment a Collegiate Institution in Birmingham which embraces industrial instruction for those who belong to a higher class of society, and they therefore presume that you have considered it expedient to confine the systematic instruction of the new institution to artizans. They would venture to suggest for the consideration of your Committee that the objects of the two Schools of Science in this respect should be clear and well defined, so that while neither of them acts in an exclusive manner, they should unite in a spirit of friendly co-operation in carrying out their common aim of advancing the general public interest by bringing Science to bear upon the operations of industry.

With regard to the inquiry contained in the latter part of your letter, as to the steps likely to be taken for bringing local institutions, such as the one proposed by your Committee, into association with a central industrial institution in the Metropolis, Her Majesty's Commissioners direct me to acquaint you that they have reason to believe that Her Majesty's Government have organized a department of Science and Art in connection with the Board of Trade, and having especial reference to the encouragement of local efforts, such as those contemplated by you. Under this arrangement, the Government School of Mines and of Science applied to the Arts will be converted into a general metropolitan School of Science, and its benefits extended to the provinces, through the agency of the department.

Her Majesty's Commissioners would, therefore, suggest whether it might not be desirable that you should put yourself in communication with Dr. Lyon Playfair, who they understand will fill the office of Secretary for Science to the department.

The Commissioners cannot conclude without once more expressing the great satisfaction with which they have seen the large and comprehensive plan which Birmingham has adopted on the important subject of industrial instruction, thus practically evincing, by its own local exertions, its confidence in the views expressed in the Memorial addressed by it to His Royal Highness Prince Albert and the Royal Commissioners on a former occasion.

They feel assured that the example thus set by a town where such manufacturing interests are involved will not fail to be followed in other seats of manufacturing industry throughout the kingdom.

I have, &c.

Wm. Matthews jun., Esq. EDGAR A. BOWRING.
&c &c.

II.—PROSPECTUS published by the INSTITUTE COMMITTEE.

BIRMINGHAM, with upwards of 200,000 inhabitants, with vast industrial resources, and great commercial energy and intelligence, possesses no

Literary or Scientific Institution commensurate with the requirements of the town and district. To supply this want, the outline of a comprehensive scheme was adopted at an influential meeting, held on the 10th of January 1853, under the presidency of the mayor of the borough. Since that time a committee, then appointed, has been actively engaged in devising the means of accomplishing the design.

It is proposed that the institute shall consist of two departments; one a general department; the other, Schools of Industrial Science. Under the former head will be embraced—1st, The Literary Branch; comprising general and reference libraries, reading-rooms, accommodation, as far as may be practicable, for the literary societies of the town, and lectures on subjects kindred to this branch; 2nd, Museums; 3rd, A collection of mining records; 4th, Lectures on general scientific subjects; 5th, Periodical meetings for the reading and discussion of original communications, upon the plan of the sections of the British Association; and 6th, a gallery of Fine Arts for the reception of examples of painting and sculpture.

The other department will be a School of Industrial Science, the members of which will be provided with systematic lectures and class instruction in the various branches of science, with especial reference to their particular occupations; and will also partake of the more important advantages of the general department. The lectures will include chemistry as applied to the various manufactures and agriculture, mechanics, metallurgy, mineralogy, and geology, ventilation of mines, and mining engineering. The education of our artizans, practical miners, and others, in the scientific principles of their daily avocations will thus become a primary object of the institute.

The Museums, common to both departments, will be divided into three distinct heads. The first to be principally devoted to geology, mineralogy, their economic application, and such parts of natural history as illustrate these sciences; also, those animal and vegetable productions used as raw materials in manufactures. The second will be devoted to manufactures, particularly those of the district, comprising specimens of articles in their different stages of process, and finished articles of different dates and countries. The third will include models and specimens of machinery, tools, furnaces, and other instrumental means and appliances used in the various manufactories.

The committee is engaged in making arrangements for associating the School of Design with the new institute, free of all charge, by which greater facilities will be afforded, and increased accommodation given for more successfully attaining its object. This will enable the committee to place the building of the Society of Arts, in New Street, at the disposal of the Society of Artists, for their annual exhibition of pictures, and will

afford them the opportunity of more completely developing their proposed educational plans.

An important feature in the proposed institute is its permanence. This will be secured by the building being vested in the corporation as trustees in perpetuity, thus giving to the donors a guarantee for the stability of the institution to which they are invited to contribute.

The committee would notice some of the practical advantages to be derived from the establishment of such an institute. The Museums will be of the greatest utility to persons engaged in the arts and manufactures; to the ironmaster, by the exhibition of the different kinds of ores and iron, and models of furnaces and machinery used in different parts of Britain, America, and the Continent; to the architect and builder, by the exhibition of building materials, with records of their cost and durability; and to the manufacturer, designer, and modeller, by the exhibition of raw materials, and of finished articles, remarkable for their artistic beauty, novelty of construction, or excellence of workmanship.

The collection of mining records will be of peculiar value in this district, by affording information as to the position of the old workings, and the situation and peculiarities of the strata in which the minerals occur.

The concentration of the two branches in one institution will afford the means of obtaining lectures of a higher order than could be accessible to either branch separately; and the classes of industrial science will confer an important benefit, in placing within the reach of the pupils a knowledge of the scientific principles involved in the various departments of manufactures and art.

The terms of annual membership will be fixed at the lowest possible scale.

Such are the chief features of the proposed institute; and the committee have the satisfaction to add that the plan has received the general approval of the Board of Trade Department of Science and Art, upon whom the committee feel that the institute may confidently rely for all the assistance and support within its parliamentary powers; it having been ascertained from Dr. Playfair that the Government is most anxious to encourage the promotion of industrial instruction in this important centre of manufacturing industry.

As the institute will be of paramount importance to the town and neighbourhood, it is hoped that the public will promptly, cordially, and liberally respond to the application which will immediately be made for donations to the building fund. The amount required will be about 20,000*l*.

CHAS. TINDAL,

Birmingham, June 6, 1853. Chairman of the Committee.

III. RESOLUTIONS passed at a Meeting held in the Theatre of the PHILOSOPHICAL INSTITUTION, BIRMINGHAM, on Thursday Evening, December 8, 1853, to organize an Artizans' Movement in aid of the "Birmingham and Midland Institute;" together with the Address of the Committee then formed.

"That this meeting, impressed with the great advantages that would result to the working classes from the establishment of the proposed Institute, thinks it desirable that a subscription be commenced amongst the artizans of Birmingham, and this meeting pledges itself to use its best exertions in promoting such subscription.

"That the delegates now present from the various manufactories do form the committee for that purpose."

The committee thus formed are now about to call upon you, the artizans of Birmingham, to give your hearty co-operation and support to the proposed Institute.

On no class does knowledge confer greater honour than on yourselves; to you it is of the greatest importance; and the knowledge this Institute is intended to convey, will be, not only a source of great pleasure, but of much profit. We intend in this address to show you, in as brief a manner as possible, how and why it would be so.

The occupations of working men are daily becoming more scientific. For example, an increased amount of intellectual skill is required to guide the steam-engine, to prepare the photograph, to work the electric telegraph, and to manage electro-plating.

If we compare articles manufactured at the present time, with those produced a few years back, a considerable improvement must be manifest, even to the most superficial observer. The true principles of Art are beginning to be better understood, and to some extent applied.

But the most enterprising manufacturer, aided by the genius of an able designer, may have their objects completely frustrated from the want of an intelligent perception, on the part of the artizan, of the spirit and purpose of the design. Thus it is evident that a greater amount of instruction must be obtained by artizans in those particular scientific and artistic principles that are more immediately connected with their daily avocations. The workman, while engaged in contriving some complex piece of mechanism, calls himself a practical man; he despises theory and cares nothing for mathematics. He is not aware that at the same time he may be illustrating a series of geometric constructions of great complexity, perhaps of elegance. Look to the many trades in which a knowledge of geometry is essential. You cannot even describe an oval pot-lid truly, without encroaching upon some of its rules. And how few workmen there are who can with ease describe a true oval. The same may be said of workers in wood; there are few who can describe correctly the proper form of scroll for a hand-rail. A knowledge of geometrical construction

is particularly necessary to them, as being the parties called upon to produce in wood the various curves so essential for architectural decoration.

The association of the School of Design with the Institute, will greatly improve the facilities for "Art education" in this town; and the collection of superior specimens of manufactured articles of different dates and countries that will be found in the Museum, together with the "Gallery of the Fine Arts," containing specimens of painting and sculpture, all of which will be open to public inspection at stated times, will gradually train the eye (by beholding all that is beautiful in Art) to a full sense of graceful outline, chaste and appropriate ornamentation, and purity of style. Gold and silversmiths, jewellers, workers in brass and iron, japanners, glass manufacturers, and many other trades that may be said to belong to this town and district, by uniting artistic skill to the other excellencies that have hitherto characterized their productions, must soon succeed in achieving greater fame.

The great excellence of classical and mediæval art is to be accounted for by the fact that every workman was an artist; and we shall never be able to rival their productions until the alliance between the arts of design and those of production is again restored. The Institute will seek to effect this object. To use the words of Dr. Waagen:—"It will seek to unite beauty and taste with practicability and durability, and so to form the imagination and taste of the pupils as artists, by studying and drawing after beautiful models, that each may be enabled with facility to make discoveries in that branch which he particularly follows."

Many of the processes carried on in the workshops of this town are beautifully scientific, but few of the workmen know it; they carry them on as they have learned them, seeing the effect, but knowing nothing of the cause. Dipping of metals is a beautiful example of chemical science applied to practical uses, and many of the failures to which dippers are liable might undoubtedly be avoided, if the workmen themselves had a practical knowledge of the scientific laws upon which their occupation is based. Few trades exist which do not require science in some shape or other. For instance: the tinman uses resin, the solderer uses borax, the blacksmith uses sand, the brass-caster uses "acid sulphate of potassa," or sal enixum, and the iron-caster uses limestone, or iron ore. These are all used to produce certain results, which the practical workman knows will follow, but he knows not why. A knowledge of chemistry would tell him, and would enable him to do more efficiently any work he might be called upon to execute.

In your daily labour many of you employ fire in a hundred different ways, and for as many different purposes; why should not the doctrine of heat be known to you? For some purposes you might then learn to use it better, and so to economize it as to make it do far more work. Many of you pass the whole day in various pursuits wherein the applica-

tion of mechanical powers are necessary; why should you not be instructed in them also? What we desire is, that you should have as comprehensive a knowledge as possible of all that gives power over nature. With this, while you are developing your skill and ingenuity, you will be sweetening your daily toil; for it is by the daily use of the powers of nature that you feed, clothe, and house yourselves. In America a large degree of intelligence among the artizans, and a comprehensive knowledge of the mechanical powers, is very general. In the race of competition you will be beaten unless you bestir yourselves. If you desire to supply the markets of the world to the same extent as you have hitherto, and to compete successfully with the educated artizans of the United States, you have but one way of doing it, that is, by bringing intellect to bear on your hand-labour. If you do not advance, your employers will; as they progress they will seek to employ those men only who have the knowledge they require, coupled with a desire to be ever moving towards the achievement of still greater improvements. The man who has these qualifications will deserve and will obtain better remuneration for his labour. Hence the knowledge this Institute seeks to impart will be to him, not only a source of pleasure, but of profit also.

To no men are habits of observation more necessary than to yourselves. To the man of observation, the simplest incidents are productive of useful results. The swinging of a lamp in the cathedral of Pisa, a phenomenon that had been witnessed by hundreds previously, did, to the mind of Galileo, suggest the fact that the pendulum descends through equal spaces in equal times, and led to the observation that a long pendulum vibrates more slowly than a short one, according to the square root of its length. Its application as a correct measure of time, and an unvarying standard of linear measure, and as a means of measuring the intensity of gravity at different parts of the earth's surface, and thence of determining its true figure, speedily followed.

We might give you other instances, all showing the importance of acquiring correct habits of observation, but we forbear. Look through history; who are the men who have achieved never-dying fame for themselves by the splendour and magnitude of their discoveries, and who have blessed the toiling worker by relieving him of much arduous and wearying toil? Are they not men who, by patient observation and diligent inquiry, have elevated themselves from the lowest ranks? Watt, Ferguson, Arkwright; who are they? Workers like yourselves. We do not say that you may attain to a like degree of eminence; but, remember, the fields of observation are open to all. You need only a desire to know, coupled with diligence in your studies; and you may then succeed in achieving a position that will make you the objects of emulation to your fellow men.

The classes to be established, and the lectures that will be given, in the proposed "Birmingham and Midland Institute," will afford you every facility for acquiring that knowledge that will be most useful to you. Therefore, let it be shown by your subscriptions that you are determined the Institute shall be raised as much as possible by yourselves, of yourselves, and for yourselves, that Birmingham may be released from the odium of its being one of the largest manufacturing towns, with the fewest scientific institutions.

Signed on behalf of the Committee,

J. W. DOWNING, Chairman,

FREDERICK GREW, Secretary.

IV.—PROCEEDINGS connected with the laying of the first Stone of the INSTITUTE on the 22nd November 1855.

(*a*) *Address from the Council of the Institute to H.R.H. Prince Albert.*

"May it please your Royal Highness,—We, the Council of the Birmingham and Midland Institute, beg leave to approach Your Royal Highness with the assurance of our devoted loyalty to the person and family of Her Most Gracious Majesty the Queen, and to offer our grateful acknowledgments for the honour conferred upon our Institution and upon the town of Birmingham by the presence of Your Royal Highness upon this occasion.

"As the chief institutions and manufactories of our town have in former years been favoured by Your Royal Highness's gracious attention, we could not have presumed to hope for the renewed honour of this visit, had we not known that the objects which the Birmingham and Midland Institute is designed to promote are regarded by Your Royal Highness as peculiarly worthy of the favour of an enlightened Prince.

"Her Majesty's auspicious reign has been marked by a long continuance of unexampled prosperity, by a vast extension of commerce, a rapid development of material resources and productive powers, and by scientific inventions which must ever rank among the most marvellous achievements of the human mind.

"One memorable result of this development of intellectual and material power was seen in that Great Exhibition of the Industry of all Nations the success of which is by universal consent attributed in no small measure to the comprehensive views and fostering care of Your Royal Highness.

"By those who entered into the spirit of that great enterprise, and saw its true significance, it was regarded not only as a record of progress already made, a trophy for victories already won, but also as an earnest of increased energy and a harbinger of greater triumphs yet to be achieved in the wide domains of science, art, and industry

"It was foreseen that a simultaneous survey and comparison of so many of the master works of man's productive powers must stimulate the mind to a keener and more comprehensive study of the principles by which the exercise of those powers is controlled.

"These hopes, as we believe, have not been disappointed. It is evident that a greater desire for scientific and practical knowledge has been diffused among all classes of the community, and not least among the class of artizans who, in the triumphs of the Great Exhibition, recognized at one and the same glance the value and dignity of human labour, and the manifold increase of which its power is capable when guided by the light of scientific knowledge.

"Nor has Birmingham, the centre of a great manufacturing and mining district, been slow to acknowledge the importance of instructing the artizan in the scientific principles of his daily occupation.

"In the design of the Birmingham and Midland Institute the general features of a Literary and Scientific Institution are combined with those of a School of Industrial Science.

"In the former department provision will be made for libraries, reading-rooms, museums of geology, mineralogy, and natural history, for collections of fine art manufactures, machinery, and mining records, and for lectures and discussions on literary and scientific subjects.

"The industrial department, which has received the approval and assistance of the Board of Trade Department of Science and Art, has been already opened with considerable success; it provides systematic lectures and class instruction in mathematics, mechanics, chemistry, and other branches of science which are specially applicable to the manufacturing and mining operations of the district.

"It is also intended to provide in the same building improved accommodation for the Government School of Ornamental Art, which has long been established in Birmingham with the happiest success.

"Such are the general features of an Institution destined, as we hope, to advance not only the material, but also the moral welfare of this great community, by uniting men of all ranks and of divers opinions in the promotion of studies which add dignity to daily labour, enlarge the faculties, refine the tastes, and fill the heart with nobler conceptions of man's destiny and of God's all-wise, all-bounteous love.

"On this commanding site, liberally given for the purpose by the municipal corporation of the borough, a building is to be erected in which Literature, Science, and Art, may be worthily enshrined under one roof.

"By Your Royal Highness's gracious condescension, significant as we hope it is of Her Majesty's favour, the first stone of that building is now to be laid under the happiest auspicies; for happy, indeed, is that nation which, while waging wars in distant lands, and sending forth her armies and her fleets to conquer, with God's help, in the righteous cause of

national independence, hears on her own shores only the echoes of victory mingling with the grateful thanksgiving of Her Sovereign, Her Princes, and her people, united in the noble work of fostering the arts of peace and diffusing the blessings of freedom and civilization."

(b) Speech of H.R.H. Prince Albert.

I am much obliged to you, my Lord, for proposing my health in such kind terms, and I cannot but be much gratified by the cordial reception which you, gentlemen, have been pleased to give to this toast.

It has been a great pleasure to me to have been able to participate, in however trifling a degree, in a work which I do not look upon as a simple act of worldly wisdom on the part of this great town and locality, but as one of the first public acknowledgments of a principle which is daily forcing its way among us, and is destined to play a great and important part in the future development of this nation and of the world in general, *I mean the introduction of Science and Art as the conscious regulators of productive industry.*

The courage and spirit of enterprise with which an immense amount of capital is embarked in industrial pursuits, and the skill and indefatigable perseverance with which these are carried on in this country, cannot but excite universal admiration; but in all our operations, whether agricultural or manufacturing, it is not we who operate, but the laws of nature, which we have set in operation. It is, then, of the highest importance, that we should know these laws, in order to know what we are about, and the reason why certain things are, which occur daily under our hands, and what course we are to pursue with regard to them. Without such knowledge we are condemned to one of three states: either, we merely go on to do things just as our fathers did, and for no better reason than because they did them so, or, trusting to some personal authority, we adopt at random the recommendation of some specific, in a speculative hope that it may answer; or, lastly—and this is the most favourable case—we ourselves improve upon certain processes; but this can only be the result of an experience hardly earned and dearly bought, and which, after all, can only embrace a comparatively short space of time, and a small number of experiments.

From none of these courses can we hope for much progress; for the mind, however ingenious, has no materials to work with, and remain in presence of phenomena the causes of which are hidden from it. But these laws of nature—these divine laws—are capable of being discovered and understood, and of being taught, and made our own. This is the task of science; and, while science discovers and teaches these laws, art teaches their application.

No human pursuit is, therefore, too insignificant not to be capable of becoming the subject both of a science and an art.

The fine arts (as far as they relate to painting, sculpture, and architecture,) which are sometimes confounded with art in general, rest on the application of the laws of form and colour, and what may be called the science of the beautiful. They do not rest on any arbitrary theory on the modes of producing pleasurable emotions, but follow fixed laws, more difficult, perhaps, to seize than those regulating the material world, because belonging partly to the sphere of the ideal and our spiritual essence, yet perfectly appreciable and teachable, both abstractedly and historically, from the works of different ages and nations. No human pursuits make any material progress until science be brought to bear upon them. We have seen, accordingly, many of them slumber for centuries; but from the moment that science has touched them with her magic wand, they have sprung forward, and taken strides which amaze and almost awe the beholder. Look at the transformation which has gone on around us since the laws of gravitation, electricity, magnetism, and the expansive power of heat have become known to us. It has altered our whole state of existence—one might say, the whole face of the globe! We owe this to science, and science alone; and she has other treasures in store for us, if we will but call her to our assistance.

It is sometimes objected by the ignorant that science is uncertain and changeable; and they point to the many exploded theories which have been superseded by others, as a proof that the present knowledge may be also unsound, and, after all, not worth having. But they are not aware, that, while they think to cast blame upon science, they bestow, in fact, the highest praise upon her. For that is precisely the difference between science and prejudice, that the latter keeps stubbornly to its position, whether disproved or not, while the former is an unarrestable movement towards the fountain of truth—caring little for cherished authorities or sentiments, but continually progressing—feeling no false shame at her shortcomings, but, on the contrary, the highest pleasure, when freed from an error, at having advanced another step towards the attainment of Divine truth—a pleasure not even intelligible to the pride of ignorance.

We also hear, not unfrequently, science and practice, scientific knowledge and common sense, contrasted as antagonistic. A strange error! For science is eminently practical, and must be so, as she sees and knows what she is doing; while mere common practice is condemned to work in the dark, applying natural ingenuity to unknown powers, to obtain a known result. Far be it from me to undervalue the creative power of genius, or to treat shrewd common sense as worthless without knowledge. But nobody will tell me, that the same genius would not take an incomparably higher flight if supplied with all the means which knowledge can impart; or, that common sense does not become, in fact, only truly powerful, when in possession of the materials upon which judgment is to be exercised.

The study of the laws by which the Almighty governs the universe is therefore our bounden duty.

Of these laws our great academies and seats of education have, rather arbitrarily, selected only two spheres or groups (as I may call them,) as essential parts of our national education—the laws which regulate quantities and proportions, which form the subject of mathematics, and the laws regulating the expression of our thoughts through the medium of language—that is to say, grammar, which finds its purest expression in the classical languages. These laws are most important branches of knowledge; their study trains and elevates the mind. But they are not the only ones; there are others which we cannot disregard—which we cannot do without. There are, for instance, the laws governing the human mind and its relation to the Divine Spirit—the subjects of logic and metaphysics. There are those which govern our bodily nature and itsconnexion with the soul—the subjects of physiology and psychology. Those which govern human society and the relations between man and man—the subjects of politics, jurisprudence, and political economy, and many others. While of the laws just mentioned some have been recognized as essentials of education in different institutions, and some will, in the course of time, more fully assert their right to recognition, the laws regulating *matter and form* are those which will constitute the chief object of your pursuits; and as the principle of subdivision of labour is the one most congenial to our age, I would advise you to keep to this speciality, and to follow with undivided attention chiefly the science of mechanics, physics, and chemistry, and the fine arts in painting, sculpture, and architecture. You will thus have conferred an inestimable boon upon your country, and in a short time have the satisfaction of witnessing the beneficial results upon our national powers of production. Other parts of the country will, I doubt not, emulate your example, and I live in hopes that all these institutions will some day find a central point of union, and thus complete their national organization.

Thanking you once more for having allowed me to assist at the foundation of your Institution, I wish it growth, vigour, and prosperity, with all my heart.

(c) *Speech of Lord Ashburton.*

I am called upon by the authorities to propose to you the toast of "Success to the Birmingham and Midland Institute." It might have been easy to select one more capable of doing it justice, but it could have been entrusted to no individual more anxious for the welfare and improvement of those for whose immediate benefit this Institute was designed; it could have been intrusted to no one more deeply impressed with the importance, nay, even with the absolute necessity, of the

movement which you are at this moment engaged in inaugurating, not only for the elevation and happiness of the working classes, but also for the maintenance of the manufacturing superiority of Great Britain in the workshops of the world. The principle, I apprehend, of this institution is to give to all classes, whether masters, foremen, or workmen, the means of studying and comprehending those processes and powers of nature with which in the pursuit of their daily avocations they have to deal. You do not, I apprehend, intend to remain satisfied with an appeal to one-half of man's being, to his reasoning powers alone. I presume it to be your desire to enlist all his faculties, to train the eye to interpret nature's aspect, to train the ear to understand her voice, to train the touch and the taste to act where the discriminating powers of the other organs fail. The uneducated workman is like the blind and deaf, fit only for some limited mechanical task. He has no *data* whereon to employ his mind. He works on therefore like a machine, at one unceasing round of monotonous toil. No wonder, then, that his spirit should rebel against a drudgery which leaves undeveloped the nobler faculties of which he is conscious; no wonder that he should turn in disgust to some pursuit altogether intellectual, as alien as possible from his profession. And what is the consequence? The higher the proficiency he attains, the more he loathes the drudgery from which he has fled. He becomes listless at his work, he loses credit in the factory, his family suffers, his position becomes a false position, he is conscious of merits he does not find the world ready to acknowledge, and his example is rather shunned than followed. But now, through your admirable institution, you not only enable him to reconcile the aspirations of an intellectual being with the worldly duties of a husband and a parent, but you open out to him a new language—the language of nature; and, where before he moved hoodwinked and indifferent, he has now presented to his sharpened and inquiring senses wonders such as the bookworm in his closet, nay, even the chemist in his laboratory, has never conceived. Instead of endeavouring by fruitless efforts to raise himself above the mechanical calling which drags him down, he now has the satisfaction of raising his calling into an art,—an art worthy of all the interest that an intellectual being has to bestow; and, if he attain excellence, there is a higher career opened to him in which he may distinguish himself, serve his family, and benefit his country. Such is the system, such are the advantages of the institution which we are met this day, under the auspices of His Royal Highness Prince Albert, to inaugurate. I might here close my remarks, and ask you to drink the toast, but I feel that I have another and a painful duty to fulfil; namely, to tell you what will be the penalty if the boon offered by this institution be rejected, or if the other manufacturing towns neglect to follow your example and to present similar advantages to their inhabitants. Our hearts and our

souls are absorbed by this Russian war. We feel, and we feel rightly, that the character of England and the honour of England are at stake, and no sacrifice must be spared. But there is another war which may be more calamitous in its results, which is being waged, not in some confined spot in the enemy's territory, 3,000 miles away, but a war waging here at home, involving, not the interests of Turks, but the bread of our children and the destinies of our country. We seem to have forgotten that by adopting absolute freedom of trade we have cast down the gauntlet of defiance to all nations, that we are fighting for superiority in our own markets, in those of the colonies, in every house throughout the habitable globe, where there exists money or credit wherewith to pay. We expect to hold our ground—have we up to this time held our ground? At the close of the war in 1815 we were superior in all the arts of peace, —are we so now? Has not the tortoise crept up to us while we were slumbering upon our presumed superiority? Let us take nearer dates. You have among you jurors of 1851 and jurors of 1855. Do they tell you that we have kept our place? They do not tell me so. It would be strange indeed if we did keep our place, inferior as we are in all that scientific knowledge which cheapens and facilitates the application of labour, unless, indeed, knowledge be weakness and science a farce. We were ready enough to twit with ignorance our suffering army in the Crimea; are we,—nobles, manufacturers, farmers, workmen,—a whit less ignorant in our several capacities than they are? Under these circumstances it is not to the Government that we must look for a remedy —it is to ourselves; our Government is constituted to follow public opinion, not to lead it. Engaged in the perpetual contest of party strife, the position of our Ministers is that of the Jews in the time of Ezra, who built their walls with trowels in the one hand, and the sword in the other. How can they who can scarce pass through an obstructive Parliament remedies for manifest and acknowledged dangers, how can they be expected to expose themselves to certain defeat by demanding from a niggardly House of Commons an expenditure to meet distant, and as yet unperceived dangers? But it is fortunate for us that we have at this moment near the Throne, and wielding the authority of the Crown, a Prince who, raised above the sphere of party conflicts, has, at the same time, larger views, more lasting interests than our public men, absorbed as they are in the party squabbles of the day. He has promoted science by every means which he can employ. He accepted and worked out (as no one else could have worked it out) the Exhibition of 1851—not that it might afford a passing stimulus to industry, but with the deeper view of showing us how we stood in the competition of industry. He has lastly, on this occasion, come forward to inaugurate this new and important movement by his presence and advice, to rouse us from our self-complacent dreams to a sense of our danger. If once the giant strength

of this country were awakened, the trammels of prejudice, routine, and ignorance would fall away like tow before the fire. But if we do remain with folded arms, and take no heed, or if we go on feeding the people only with desultory information, diverting their minds from the serious work of preparation for the real business of life, treating them as the nurses of our towns are said to treat the infants committed to their care, quieting them with cordials, at the same time that they cloy their appetites and stunt their progress, why, then the result is clear—our manufacturers must sink, the employment of our people must go, and then this England, of which you are so justly proud, this storehouse of nations, this pattern land of order, this refuge of the oppressed,

"Oh! it will be a wilderness again,
"Peopled with worse than wolves,"

—peopled with starving, desperate outlaws.

APPENDIX I.

Evidence given before the National Gallery Committee of 1853 in favour of the adoption of the Kensington Gore Site for the New National Gallery.

Evidence of Mr. Dyce, R.A.

7510. *Chairman.*]—Do you see any objection to the removal of the gallery, assuming it to be advisable that it should be removed, on the ground of air and locality, to any distance from London, or from the centre of London, on the ground that it would render the gallery less accessible to the people at large?—I confess, I do not see any objection arising on that ground; it is very difficult to say what is the centre of London. I think that, generally speaking, if you asked a man what was the centre of London, he would say the centre of London was that part of it in which he lived; supposing the National Gallery to be removed to Kensington, if a line were drawn north and south from Waterloo-bridge, I am inclined to believe that that part of London which was cut off to the west, would include the vast majority of those persons who are very likely to frequent the National Gallery.

7511. Do you think that people living at the east end of London are even now not much in the habit of visiting the gallery?—I think they are not.

7512. But you think it should be an object, do you not, to encourage them to visit our art collections?—Yes.

7513. And you would rather hold out motives to them to go there, than to stay away?—Yes.

7514. Would not the removal of the gallery further off tend to confirm their habitual absence rather than promote their presence in the gallery?—I am not sure that it would; it may appear very paradoxical, but when a thing is near us, and can be seen at any time, we are very apt to neglect it, whereas, when it is a little distance off, we make an effort to see it.

7515. Do you not think that removing it to any distance would be attended with inconvenience to copyists and artists?—No; there are already many artists who live at Kensington, and in that neighbourhood; and, if the gallery were removed to that quarter, the number would probably increase.

EVIDENCE of Mr. BOWRING.

8541. *Chairman.*] I believe you are the Secretary to the Commissioners for the Great Exhibition?—I am.

8542. And one of the Under Secretaries of the Board of Trade?—I am Registrar of the Board of Trade.

8543. You are quite cognisant of the scheme which was entertained or suggested by the Commissioners, to place the buildings of a number of institutions in one group?—I am.

8544. Comprising various establishments, literary, scientific, artistic, and industrial?—Yes.

8545. What was the whole number of such institutions that were proposed to be so combined?—The Commissioners have scarcely attempted to define any precise number; they have provided space in the ground which they have purchased at Kensington Gore to accommodate all that may wish to come. Those to which special reference is made in their Report, are the National Gallery, the Sculpture Galleries of the British Museum, in case they should be removed, a great Trade or Commercial Museum, the formation of which is now under consideration, and the nucleus of which is already possessed by the Commissioners, museums of patented inventions, of mediæval art, &c., as well as the Government department of Science and Art, for which it is absolutely necessary to find permanent accommodation.

8546. Was not an invitation held out to other public institutions to join, if they were disposed, that same group to which you have alluded?—Yes; the learned societies and different scientific bodies.

8547. What number of such institutions do you consider the Kensington Gore ground which has been purchased could accommodate?—It would depend entirely upon the size of the buildings and the nature of the general arrangements adopted.

8548. You are, I presume, well acquainted with that piece of ground?—Yes, I am.

8549. Can you mention the exact acreage which has been purchased?—It is, as nearly as possible, 86 acres altogether.

8550. What proportion of that was purchased with money the surplus of the Great Exhibition?—It was a joint contribution of 150,000*l.* each, by the Government and the Royal Commission.

8551. Has that sum been all expended?—A certain portion of it is at this moment unexpended.

8552. Do you know how much?—I think about 15,000*l.* remains; there are certain negociations now in progress to which that will be applicable.

8553. Is their object to extend the ground further. There is a wedge that comes in from the road, with buildings upon it?—It will, perhaps, be scarcely advisable to enter into particulars with reference to those points at present.

8554. It is considered a good purchase, is it not?—The best test is the value of the surrounding property; since the purchase property in the neighbourhood has been sold at a much higher rate.

8555. Do you think the property would at any time fetch as much or more than was actually given for it?—Yes, I do.

8556. What is the nature of the soil?—Mr. Mylne, a gentleman of very considerable geological attainments, who has published a geological map of London, and who lives in the immediate neighbourhood, has taken a great deal of trouble in investigating the nature of the soil; and he has just prepared the map I now produce, which exhibits completely what the soil is. The dark colour represents the London clay; the red lines show the proposed lines of road. The whole estate is on gravel, with the single exception of the little strip to which I am now pointing, where the London clay comes to the surface.

8557. Lord *Seymour.*] That is near the road?—Yes; about 50 or 60 yards from the road.

8558. And that is on high ground, which could be easily drained?—There would not be the slightest difficulty with regard to the drainage of that land; there are some ponds in this part (*pointing them out on the plan*), into which the drainage runs.

8559. And those ponds could be themselves drained, could they not? There would not be the slightest difficulty in draining the whole property. These (*pointing them out*) are very first-class houses; this to which I am now pointing is a narrow public lane; and these are some very small tenements which we of course do not expect will remain there.

8560. *Chairman*] You have mentioned that the lower part of the ground is London gravel?—Yes, as is also the higher part, with the exception of the small intervening strip of clay.

8561. Lord *W. Graham.*] Do you know what is under the clay?—The small piece to which I have referred you may consider as a clay soil; the rest is entirely gravel.

8562. *Chairman.*] With the exception of the part near the road, which is clay, the whole remainder of the soil is gravel?—Yes.

8563. What amount of acreage of clay is to be deducted?—It is a very small piece; I do not think it has been exactly calculated.

8564. Is there an intermediate space of stratum of clay between the Kensington gravel and the gravel which commences on the lower part of Kensington Gore ground?—It is gravel at Gore House; it begins at the back of Gore House.

8565. There it begins to be clay?—Yes; it is a very narrow strip.

8566. And then the gravel begins to appear again in the lower part; is not that so?—Yes.

8567. What are the elevations of the different portions of the ground?—I have another map here (*producing it*), on which the elevations are all laid down; they are stated with reference to the Liverpool datum, which is about 12½ feet below Trinity high-water mark; of course, if the object be to see the relative elevations, it makes very little difference which datum is given.

8568. The ground at Kensington Gore is not like that at Pimlico, which was overlaid with a surface of clay?—At Kensington Gore it is overlaid with a slight portion of brick earth to a very small extent.

8569. Will you have the goodness to specify the elevation?—At Gore House the elevation is from 58 to 64 feet above the Liverpool datum.

8570. Lord *Seymour.*] What is that above the Trinity?—About 46 to 52 feet; that is on the road opposite to Gore House.

8571. To what level does the lower portion of the ground sink?—To 26 feet above the Liverpool datum, which represents rather less than 14 feet above Trinity high-water mark.

8572. What difference does that give between the highest point on the edge of the road and the lowest point?—It is a slope on the first half of the estate, and the second half is flat, therefore to ascertain the gradient you would only take the part on which it slopes.

8573. I allude to the gross difference between the lower part and the upper ground?—Thirty-eight feet over a length of 2,500 feet.

8574. Are you competent to give any information as to what the level is on which the present National Gallery stands?—Twenty-eight feet above Trinity datum.

8575. This is the ground upon which or where the National Gallery stands, is it?—Yes; but at Charing Cross, where the statue stands, it is only 24 feet above the Liverpool datum, or 12 feet above the Trinity datum.

8576. How much above Trinity datum is the ground just in front of the National Gallery?—About 23 feet.

8577. Mr. *Labouchere.*] What is the elevation of Buckingham Palace?—Nineteen feet above the Liverpool datum, and less than seven above the Trinity House datum.

8578. What is the elevation at Stafford House?—Twenty-three feet above the Liverpool and 11 feet above the Trinity datum.

8579. Lord *Seymour*.] In order to convey a notion to the Committee of the height of the Trinity datum, we may take the floor of Westminster Hall as about the same level, may we not?—The Trinity datum is the mean high-water mark on the London Docks, and is 12½ feet above the Liverpool datum.

8580. Is it not the fact that the floor of Westminster Hall is practically nearly about the same level as the Trinity high-water mark?—I should think it must be very nearly the same.

8581. *Chairman*.] What is the difference between the level of the highest part of the Kensington Gore ground, near the road, and the level of the gravel pits, or what is called the Deer park, behind the sunk fence of Kensington Gardens, where the bastions are?—At the highest point of the Gore House estate there is only a difference of a very few feet.

8582. That is at the point near the road?—Yes, where it adjoins Eden Lodge.

8583. What is the greatest breadth of the ground purchased by the Commissioners?—The average breadth is above 1,200 feet.

8584. One part is two or three times as broad as another, is it not?—The lower part is much broader than the upper. I may mention that the slope continues from Kensington Gore and the road down to a little brook which occurs about half way across the property; therefore there is a distance of about 1,200 feet of slope, on which the inclination is between 1 in 30 and 1 in 40, which is something like the inclination of Waterloo-place or St. James's-street.

8585. The narrowest part of the property is the frontage towards the road, is it not?—Yes.

8586. And that part is separated from another little strip by a range of buildings?—Yes, consisting chiefly of first-class houses.

8587. What is the whole extent of frontage towards the road, including in your measurement the little strip of unpurchased ground that intervenes?—It is very nearly 1,100 feet, of which the unpurchased part is rather more than 300.

8588. What is the width respectively of the two purchased parts fronting to the road?—Six hundred feet on the Gore House side, and very nearly 200 on the other, of which 100 feet are to be devoted to a road.

8589. What is the greatest width of the ground in the lower part, where the widest portion of the ground is?—Two thousand feet, as nearly as possible.

8590. You mentioned that the National Gallery and the British Museum art collections were proposed to be combined in one edifice, what part of the ground was it that was destined for that purpose?—

There has been no distinct recommendation made; the Commissioners merely suggested that it was desirable to have it on the north side of the property, with a frontage towards the road, and with the trade museum on the south, and the Government Departments of Science and Art on the two sides.

8591. What space was it proposed there should be between each of the buildings, with a view to the circulation of air?—The Commissioners have made no proposal as to that.

8592. If there were a proposal to collect a great number of other edifices on the remainder of the ground, they would begin by putting pretty close to each other the three or four buildings they have already destined to occupy the site, in order to give room for the addition of others, would they not?—The Commissioners are not in a position to decide such questions independently of the Government, because, by an arrangement with the Government, they and the Commissioners have a joint control over the property.

8593. Mr. *B. Wall.*] The Department of Science and Art includes the Schools of Design, does it not?—Yes.

8594. So that it is the intention of the Commission, if the scheme is carried out, to remove the Schools of Design to Kensington?—The Department of Art, which has been hitherto known by the name of the School of Design, has no permanent location at present; it is merely temporarily lodged in Marlborough House.

8595. But it is the intention of the founders of the scheme to which you have referred to remove the Schools of Design to Kensington, is it not?—That is what the Commissioners point to; the decision on the point rests however with the Government.

8596. *Chairman.*] Considering how much has been said as to the evil of smoke and other noxious effluvia both at the National Gallery and at the British Museum, and the mischief that arises from discoloration and other damage to the monuments, do you not think that if the National Gallery were placed in connexion with other buildings the different objects of art would run the risk of still being exposed to those evil influences?—The only building from which you would expect to have smoke would be the laboratory in connexion with the department of science, but I have ascertained that the smoke generated there would not be more than from a common kitchen fire; smoke is as great a nuisance to the department as it would be to the National Gallery, and I have ascertained moreover that they would use smokeless fuel.

8597. Do you not think that the erection of numerous important public buildings on one site would raise a sort of suburban city around them, inhabited both by gentlemen and tradespeople?—You would very possibly have the same effect as that which is observable at Sydenham

where all the frontages near the Crystal Palace are being bought for building purposes. You would attract population there, but it would be a population inhabiting houses of the first-class, from which the amount of smoke would be very trifling; it would not be more than that of a provincial town.

8598. Do they burn a less quantity of coal than other houses?—There would be much fewer of them.

8599. If people of the first class go to reside there, they must have tradespeople and others living near them, must they not?—It would naturally bring a population round, no doubt.

8600. Mr. *Labouchere.*] Would not ground in the immediate vicinity of this property become so valuable that there is but little probability of its being occupied by any class of building except first-class houses; it would never answer for a brewery or distillery?—No; when people can get 3,000*l.* or 4,000*l.* an acre for land, as they do at present in that neighbourhood, I conceive it is not very likely there would be a brewery or distillery there.

8601. The tradesmen also would be at a certain distance from the proposed site, would they not?—I apprehend so; the immediate vicinity would be occupied entirely by first-class houses.

8602. *Chairman.*] Do you not consider that if the Gallery occupied the whole frontage to the road, and houses, even of a superior class, were to spring up on each side of it, and also a certain number of other houses connected with them, the ultimate effect would be that there would be a town extending on each side within not many yards of the building; and do you not think that the building would ultimately be exposed to those noxious influences which it is considered so desirable now to avoid?—That must be the case to a certain extent anywhere where you attract the population, but there is no place in London or its immediate vicinity in which you could have such security against that intrusion as you would have on the Commissioners' ground.

8603. Do you not think a preferable site for such delicate objects as there are in the National Gallery, would be the centre of some wide open space, with a sufficient interval between it and the population, and the smoke, to allow the air to circulate freely, and to be diluted before it reached the building?—I can conceive a spot in the centre of Hyde Park which would be a very desirable situation; but from the practical difficulty which the Commissioners experienced in obtaining a site in Hyde Park for a few months, for the purpose of a national object like the Great Exhibition, I think the difficulty of carrying out such a project would be insuperable.

8604. Have you examined the sites proposed by the Commission of which Lord Seymour and Mr. Ewart were members?—I am cognisant of their Report, and of the sites they proposed.

8605. Do you not think that if the National Gallery, though not on such a site as that to which I have alluded, stood by itself, it would be spared from those injurious influences to which allusion have been made, more effectually than if combined with another great group of buildings which would be likely to increase the population about it?—Two sites were suggested by the Commission to which you refer, in the event of Government not being willing to incur the expense of purchasing another site.

8606. My question is, whether a more insulated site, though not in the centre of a great park, would not be better calculated to shield the National Gallery from the influences to which I have alluded, than other sites in the neighbourhood of which a suburban town would be likely to spring up?—A suburban town already exists at the back of, and immediately surrounding, the site to the north of Kensington Gardens, to which I understand the National Gallery Commission to have referred. The far larger tract of ground purchased by the Royal Commission on the south of Kensington Gardens affords a much more insulated site.

8607. Mr. *Labouchere.*] Do you believe it possible to find a space such as the Chairman describes, in which such a building could be erected, except in one of the parks in the immediate vicinity of London?—I am not aware of any spot presenting anything like the advantages that the Commissioners' ground does.

8608. Was not that question considered by the Commissioners before the ground was purchased?—Very much. It is entirely owing to accidental and family matters that this property has not been built over long ago.

8609. Every open space near London has been rapidly built upon lately, has it not?—Yes.

8610. Was not this the only ground applicable and available for the purpose?—Yes, it was.

8611. This property abuts on one side on the Park?—Yes; that gives an area of 677 acres (which is, I find, the joint area of Hyde Park and Kensington Gardens), which is of course absolutely secured against being built over; so that on the north you have an absolute security against intrusion.

8612. Mr. *Ewart.*] Do you not consider it most important to have an open space to the north?—Yes.

8613. Is it not the fact that the principal mischief comes from the north?—Certainly; and that was considered by the Commissioners in fixing on a south-west part of London.

8614. You have alluded to the report of the Commission of which Lord Seymour and myself were members; are you aware that the Commissioners had before them at that time any proposition with regard to

the purchase of this property at Kensington Gore?—I believe that property is not the one to which they especially referred.

8615. The Royal Commissioners' proposition was not then fully developed?—No.

8616. Mr. *B. Wall.*] The ground in favour of which the Commissioners reported is still to be had, is it not?—I am not able to say with certainty; that was a very small piece, consisting of from 15 to 20 acres; and the Royal Commission felt that for their purpose it was useless to attempt to get so small a space.

8617. Do you know the distance from Spitalfields to Kensington?—I am not prepared to say; I should think between five and six miles; I have not any exact knowledge of the distance.

8618. There are a great many young artists and pupils who live in that part of the metropolis, are there not?—A considerable number, I believe.

8619. And if the collections were removed to Gore House, they would be pupils at that institutions?—I did not apply the remarks I previously made to the School of Design at Spitalfields, but rather to what is now called the Department of Art at Marlborough House; I contemplated the removal of that, but I should consider the Spitalfields School of Design much in the same light as the provincial Schools of Design; there can be no objection to having those local Schools of Design in communication with the central body.

8620. In point of fact we should have a very expensive staff, without scholars?—I contemplate the removal of the whole of the Department at Marlborough House, entirely distinct from Spitalfields.

8621. Mr. *Ewart.*] Spitalfields is a local district?—Yes; it is not at all necessary, I apprehend, to remove that any more than it would be necessary to remove the Birmingham or Manchester schools to London.

8622. Mr. *B. Wall.*] Are not the patterns which we see at Marlborough House, and some of which we see at Gore House, intended for the instruction of scholars in design?—I apprehend so.

8623. Therefore it is of the last importance that those scholars should see the specimens at Gore House?—It is certainly very useful for them to see them.

8624. And the majority of those who are likely to benefit from those drawings and patterns live in the heart of the metropolis?—The Spitalfields School, to which you probably refer, possesses its own examples and patterns, like any other local School of Design; that school is already between three and four miles from the central department at Marlborough House.

8625. But there is a great difference between six miles and three?—It is much less than three miles from Marlborough House to the Commissioners' estate; it is not two miles.

8626. Mr. *Labouchere.*] Great doubt has been expressed by some witnesses as to the propriety of removing the National Gallery to the neighbourhood of Gore House on account of the want of accessibility, especially to persons in the humbler classes of life who might desire to visit the National Gallery; have you turned your attention to that subject, and have you any statement with reference to it that you are able to make to the Committee?—Do you mean actual accessibility to the site, or only as affected by its supposed remoteness?

8627. I should be glad to have your opinion on both points, beginning with the first?—With regard to the accessibility of the site, and as to the means of communication, the property itself would be surrounded by excellent roads, varying from 80 to 100 feet wide; those roads are all laid down in the map I have here; and as to the possibility of people going, if they wish it, such a distance, I would instance the Great Exhibition itself, on a site just opposite the Commissioners' estate, which during a period of between five and six months, was visited by upwards of 6,000,000 persons, showing, that if you give sufficient inducement to people to go, neither the distance from the heart of London, nor the difficulty of getting there, will deter them from going.

8628. Mr. *Hardinge.*] Are there any students who attend lectures at Marlborough House?—Yes; there are classes and lectures there for technical instruction in various departments, which are numerously attended by students (beside the regular School of Design at Somerset House, which is about to be transferred there).

8629. What part of London do they come from?—I do not know.

8630. Mr. *B. Wall.*] A great number of persons who came to the Exhibition, consisting of schools, labourers, and a vast variety of other people sent up from the country and from the metropolis, had their expenses paid by private subscriptions, had they not?—That was the case to some extent; but they formed a very small proportion indeed of the gross number of 6,000,000.

8631. Have many persons visited the exhibition which is now open at Gore House?—Yes; about 8,000 since its opening, at the end of May.

8632. Has not the fee for admission been reduced from sixpence to threepence?—Yes, on Mondays.

8633. Has not that reduction been made in consequence of the small number of persons who visited the place?—I always contemplated that after the exhibition had been opened for some time, the charge for admission would be reduced. The number of visitors since it has been opened has been at the rate of 70,000 a year. People go in great numbers to Windsor Castle, Hampton Court, and Kew Gardens, notwithstanding their distance from London.

8634. For what reason was the fee for admission to the exhibition at Gore House reduced?—I cannot state; it is very usual in the second part

of a season to demand a lower rate of admission; I have not had any personal acquaintance with the reasons for the reduction.

8635. Is it not your opinion that it had reference to the small number of visitors?—I am really scarcely in a position to say.

8636. You are not in a position to give a negative to my question?—No, because I cannot state the reasons which have induced the reduction. I can only say that I always expected that the charge for admission would be ultimately reduced.

8637. *Lord Seymour.*] All those buildings you have mentioned are buildings to which persons have access without payment?—Yes, without payment.

8638. And you compare the exhibition at Gore House, which has been open but for a short time, and for entrance to which payment has been demanded, with them?—I have a statement here (*producing it*) of the number of persons visiting different places, both in and out of London, and I find that the number of visitors last year at the Zoological Gardens, where a charge is made for admission, was 305,203, or very nearly as many as at the National Gallery, where they amounted to 352,220, and where no charge is made. I take those gardens as a well-known popular place of amusement; it is half a mile further from the Palace of Westminster than the Commissioners' site, and about the same distance from Charing Cross as that site.

8639. Mr. *Vernon.*] Do you include children among the number of visitors to the Zoological Gardens?—It is called the number of visitors. In Kew Gardens last year the number was 231,010; that is many miles from London; that shows that if you give people a sufficient inducement, they do not find distance an objection. The number visiting Hampton Court was 173,391 last year; while the visitors to the British Museum were 507, 973, and to the Vernon Gallery 155,013. I have also here a statement of the number of visitors at the Duke of Northumberland's two houses, and also at the Bridgwater Gallery and Windsor Castle, in the six summer months of 1851.

8640. Have you the numbers?—Yes; to Northumberland House (which is in town) the numbers were 240,000; to Sion House (out of town), 110,000; to the Bridgwater Gallery (in town), 80,000; and to Windsor Castle, 129,400. I venture to submit that all these figures prove conclusively that the mere distance of a place of exhibition or public amusement from the heart of London, or even from London itself, forms no bar whatever to its being resorted to freely by the great masses of the population, whose interests it is so important to bear in mind when considering the question of the site of the National Gallery.

8641. Lord *Seymour.*] Are there not certain restrictions put on the admission into those galleries, although they are in town, inasmuch as the people have to go elsewhere to obtain tickets before they can be admitted?—Yes.

8642. And that always is a considerable restriction upon the admission of the public?—Yes, it probably tends in that direction.

8643. Mr. *Vernon.*] With reference to the places of resort out of town which you have mentioned, both Kew and Hampton Court are open on Sunday, are they not?—They are; but I believe that Kew Gardens have been so opened for the first time this summer. The number of visitors there in 1850 was 179,627, and in 1851, 327,900. In these years, as well as in 1852, those gardens were closed on Sunday.

8644. And Sunday is a day on which the working classes would naturally avail themselves very largely, as a matter of course, of the opportunity to take a holiday to any agreeable place out of town?—Yes, that may be the case.

8645. Mr. *B. Wall.*] Have you ever heard of any evil resulting to the pictures from the number of people who visit them, either at Bridgwater House, Northumberland House, or Windsor Castle?—No; the reports given by the Duke of Northumberland and Lord Ellesmere, and also that from Windsor, are, that the conduct of the visitors was perfectly exemplary; it was certainly so at the period of the Exhibition.

8646. Of course any injury that might occur to the pictures in the National Gallery would equally occur, and rather more strongly, to the pictures in Northumberland House, that being in rather a lower position, nearer the river and the smoke of the Metropolis?—Yes; it is on lower ground.

8647. Lord *W. Graham.*] The rooms in Northumberland House are all covered with carpet, are they not, so that there would not be so much dust?—I am not able to speak upon that point.

8648. *Chairman.*] Would you propose to have the National Gallery open on Sundays?—That question has not been considered by the Commission; nor do I conceive that it comes in any way within their province to consider it.

8649. Do you think there is more objection to it than there is to Hampton Court being open on that day?—I am scarcely prepared to discuss that point.

8650. Lord *Seymour.*] Have you taken any means to ascertain whether or not the class of artists in the Metropolis would object or would approve of the removal of the National Gallery to such a site as that at Gore House, assuming that that site afforded the means for constructing a finer gallery than now exists at Trafalgar-square?—So far as I can judge, I should say the general opinion is favourable to the removal; but I am aware that there is not a unanimity of opinion on that subject.

8651. Upon what grounds do you form that judgment?—In the reports which I have seen occasionally in the papers of the evidence given before this Committee, I have observed that there is conflicting evidence on the

advisability of removing the site. I have also heard the matter discussed on various occasions.

8652. Are the Committee to understand, that, as connected with the Commission, you have not instituted any inquiry so as to be able to give the Committee any opinion on the subject?—I have made no official inquiry on behalf of the Commission directed to the especial question of the feeling of the collective body of artists on the point; nor do I see how that could have been done, consistently with the necessity of secrecy during the conduct of the negotiations for the purchase of the land.

8653. You propose to remove a great many institutions to this distant site, as I understand, do you not?—Yes.

8654. For the purpose of instructing various classes of persons in this Metropolis in works of art?—Making it the great central educational point in Science and in Art.

8655. In order to make it the great central place for education, is not one important element for consideration its accessibility to the public?—Certainly.

8656. What means did you take to ascertain whether or not the classes to be educated there would object to or would approve of going there?—The first question for the Commission to decide was the question as to the practicability of obtaining a site; and the moment they found there was no such a thing as a perfectly central site to be obtained, they had no alternative but to take one further removed. It was not a question of the Commission choosing whether a site in the centre of London or one farther off would be most accessible, it was a question of possibility; that was the immediate cause of a comparatively suburban site being chosen.

8657. Do you propose to have lectures upon Art?—I presume they would be included in any general arrangement.

8658. Did you endeavour to ascertain from the class of persons who would attend those lectures, whether there would be a great inconvenience in having lectures at such a distance from London as Kensington Gore?—Those lectures are already given at Marlborough House and at the Museum of Economic Geology. In the case of the latter, I am able to state that the number of persons, especially of the working classes, applying for admission is infinitely greater than could possibly be accommodated.

8659. Did you endeavour to ascertain where the people come from who attend these lectures at the Museum of Practical Geology?—No, I have not been informed.

8660. Nor do you know where the people come from who come to Marlborough House, and attend the lectures?—No, I do not.

8661. One of the objects you had in view was to have a museum of architectural design?—One of the objects was to render such a thing

possible; at present there is no such thing in existence, as far as I am aware.

8662. Is there not a small concern of the kind in Cannon-row at present, got up by some gentlemen, in connexion with workmen?—I am aware that there is a large collection at Thames Bank, belonging to the Government, of mediæval casts, and so forth.

8663. Is there not an architectural museum of some kind in Cannon-row?—I am not aware of it.

8664. You cannot give the Committee any information, founded on inquiry, as to whether or not people would object to go out to Kensington Gore for the purpose of receiving instruction in art?—We can only judge from past experience; our experience derived from the Exhibition is, most decidedly, that people would go there.

8665. The experience you have had, as far as it applies to the societies to whom you have applied, is, I believe, unfavourable to going there?—The Commission have made no application of any kind to any society; they have merely stated, "If you like to come to our site, here is a site to which you may come;" but they have never entertained the idea of forcing it upon them.

8666. It has been intimated to the various societies that there might be a site available for them on this spot, because it was intimated directly in the Report of the Commissioners; are you aware whether they have viewed it favourably or not?—As respects the chartered societies who compose the body your Lordship specially refers to, their opinion, I believe, is adverse to removal at the present moment.

8667. Those societies may be considered to consist rather of the upper classes, may they not?—Yes.

8668. They are unfavourable to the removal?—They are unfavourable to the removal.

8669. And as to the class of artists, you cannot give us any opinion?—No, I am not in a position to give an opinion as to them beyond what I have already stated.

8670. Mr. *Hardinge.*] Do not a large proportion of artists live at Kensington, and in that neighbourhood?—Yes; the Commissioners made inquiry on that subject, and found that a great number lived to the west of Charing Cross.

8671. Mr. *Ewart.*] On what grounds do the societies object to the proposed removal?—Simply and solely on the ground of the proposed site being so far removed from the centre of London; but the same objection was made to the site of Somerset House originally; it was stated to be impossible to remove westward of Gresham Street; and if I am correctly informed, the site which the learned societies are at this moment anxious to obtain is one in the direct line to Kensington Gore, and about half way thither from Somerset House.

8672. Mr. *Labouchere.*] There were several distinguished artists, were there not, on the Royal Commission?—Yes, who were parties to their report.

8673. Sir Charles Eastlake?—Yes.

8674. Sir Richard Westmacott?—Yes.

8675. And Sir Charles Barry?—Yes; Sir Charles Eastlake and Sir Richard Westmacott were both also members of the Commission to decide on a site for the National Gallery.

8676. Mr. *B. Wall.*] Those gentlemen are connected with the Royal Academy?—Yes; and Sir Charles Eastlake is also connected with the National Gallery.

8677. Mr. *Vernon.*] In the statement made just now of the number of persons attending various galleries, you took the year 1852 as an instance, did you not?—The statement from which I read applies to three years; 1851 was an exceptional year.

8678. Are you aware that in the year 1852 the numbers who visited the National Gallery were much fewer, and that only about half the number attended in that year that usually have attended it in former years?—There was considerably less than half the number that attended in 1851.

8679. Are you aware that the number generally was less in that year than in 1850?—Yes; in 1850 there were 575,000; and in 1852, 352,000; that is, exclusive of the Vernon Gallery.

8680. Mr. *Labouchere.*] Can you speak generally as to the objects of the Royal Commissioners in purchasing this site?—It was to afford the means of education in art and science, and to concentrate it as much as possible, by bringing together all the different departments and bodies representing art and science, so as to be mutually beneficial to them all alike; it was considered desirable to concentrate their libraries for instance; at present they are all scattered; each body has its own separate collection, and the funds of most of them being very limited, there are not many means of improving their libraries; but on this site it has been proposed that one general library should be made, available for all.

8681. Would there not be a considerable convenience to the public in the juxtaposition of several of these great objects of attraction?—Certainly; and even the societies which are at present unwilling to come to Kensington, have expressed a decided opinion in favour of the juxta-position; the Royal Society and the Astronomical Society, for instance.

8682. Lord *Seymour.*] You think that it would be a great advantage to have one general library for all these purposes?—Yes.

8683. A library which must embrace all subjects of art, and all subjects of practical science?—Precisely.

8684. Do you think that separate libraries for separate departments would also be necessary?—If you have those departments all there, I scarcely see the necessity for having a distinct library for each department.

8685. You are aware that at the British Museum there is a very large library?—Yes.

8686. And are there many departments which require frequent reference to books?—Yes.

8687. Are you aware that for their own convenience they are obliged to have small departmental libraries, besides the one general library?—That is to a certain extent the case.

8688. Does not that seem to show that, instead of having one general library answering the purpose of all, the subdivisions of knowledge makes it desirable to have separate libraries for the different departments in art?—I should not propose to remove from the British Museum the books they have there now; my feeling would rather be to let the suggested library include duplicates of such scientific works as are now in the Museum, and a large number of which duplicates are already possessed by isolated societies.

8689. You would begin by making another vast library, applicable to all purposes of art and all purposes of science?—Yes, but of course it would be very restricted in its extent, as compared with a vast national general library, such as that at the British Museum.

8690. Would it not be necessary, besides, that each of these departments should have smaller libraries for ready reference, without going to the central library?—I do not apprehend that that would be necessary.

8691. Is it not the case that at the British Museum the different departments are obliged to have libraries for the purpose of ready reference, besides the one large general library?—It is to a certain extent, I believe.

8692. Why then do you think that your establishments at Kensington Gore would be exempt from that condition which is found necessary at the British Museum?—It may be a matter of convenience, for those societies who can afford it (which few can), to have good libraries of their own; but I apprehend that the convenience of having a comprehensive library for general reference on all such subjects as those in question would far outweigh any inconvenience there might be in people having to go a few additional yards for their books.

8693. This library would be open to the public for study?—I apprehend so.

8694. In the case of any book in frequent use, you must have many copies of it, so that it may be referred to in the particular departments, and may not be taken from the library where the students would be

able to see it?—It is invariably necessary, in any library, to have several copies of works of a very popular nature.

8695. You would require in the library a great many copies of all the best works on art and all the best works on science?—To a certain extent that might be convenient, but I do not know that it would be necessary to have such duplicates to any great extent.

8696. Mr. *Ewart.*] Though your library would be devoted to science and art, it would exclude a vast number of other subjects, and would be a limited library?—No doubt.

8697. *Chairman.*] Do you not think that if a student of painting or sculpture wished to consult a book connected with his own pursuit, it would be rather inconvenient for him to go, perhaps, some distance to a general library in order to get that book, instead of having it to his hand? —By having a general library, he would have it to his hand.

8698. Would you let all the buildings have access to the library?—That is a point which has not yet been considered; though I presume every possible facility would be given for consulting the library. I may here observe, with reference both to this and to the other questions that have been raised before the Committee respecting the occupation of the Kensington Gore site, that the Royal Commission has not attempted to do more than submit for public consideration and discussion the outline of a general system, bearing in mind, to use the words of their report, "that the filling up of the plan that may be adopted must be left to the wants expressed, to the interest felt by the public at large, and to the voluntary efforts of institutions, societies, and individuals aided by the efforts of Government, to develop more fully the institutions already founded by it, and which are so much appreciated by the public."

8699. Would not a student of sculpture or painting, unless there were a library in his own department, or in his own range of hall or gallery, be obliged to go to a distance to get any book he might wish to consult? —It might so happen; but that would seem to be a question of the greater or less extent of the library proposed to be formed there; not a question of the desirableness of having or not having it.

8700. He would have to leave the building in which he was studying sculpture or painting, and go to another building where there was a library, and thus separate himself from one object to get to another?—On the supposition that the library was apart from the other buildings, it would be so; but the question seems to be whether it is desirable to have a library there for the convenience of students.

8701. Lord *Seymour.*] Would this combined collection of institutions be available for the purposes of study and the promotion of art, unless it had a library connected with it?—I apprehend that a library must always be a useful accessory to other means of study.

8702. Mr. *Labouchere.*] Would there be any difficulty, in point of space, in finding ample room for collections of works of art, and for any library that it might be thought desirable to connect with those collections?—None whatever, the space is so ample.

8703. With regard to the question of accessibility, have you heard any suggestion of any fresh means of communication across Hyde Park to the proposed site?—Of course that is a matter for the public and the Government to decide. I have heard an ingenious suggestion, that you might make a road accessible to omnibuses, for instance, where the sunk fence runs now which separates Hyde Park from Kensington Gardens, by which they would approach below the level of the Park and cross Rotten Row by means of a tunnel, without in any way interfering with the Park.

8704. Mr. *B. Wall.*] To connect Tyburnia with Kensington?—Yes.

8705. Mr. *Labouchere.*] Have you any reason to believe that that proposal has been seriously entertained or considered by persons whose opinions would be of weight?—The only persons I have heard discuss it have been favourable to it as a very ingenious suggestion. I am not prepared to say that it has been entertained seriously or sufficiently as a distinct proposition.

8706. Mr. *B. Wall.*] Has it been at all examined by the Government department?—Not that I am aware of; but it would give a fresh means of access from that part of London to this site.

8707. Lord *W. Graham.*] Do you consider it necessary that all those departments of education to which you have alluded, should be connected with the picture gallery?—I think it is very desirable that they should be so connected.

8708. Do you think it is important to all of them?—Not equally so to all.

8709. To which?—To the art department; to all students in the department of art, it is very desirable that they should have access to a National Gallery in which they could get instruction in the principles of art.

8710. Is it very desirable, in your opinion, to have Schools of Design in connexion with the National Gallery?—My own opinion, as I have stated, is that the students in the department of art would be much benefited, had they access to a properly-arranged and extensive national collection of works of art.

8711. Mr. *Ewart.*] When you speak of Schools of Design, to what school or schools do you particularly allude?—I allude to the School of Design at Marlborough House, without interfering with local schools, of which Spitalfields must be considered one.

8712. Lord *W. Graham.*] Do scholars come now to Marlborough House to draw?—There are many classes for scholars and students now held at

Marlborough House. Among them may be mentioned those for teaching painting on porcelain, the process of lithography, the principles of ornamental art applied to woven fabrics, &c.; the same to furniture, metals, &c.; artistic anatomy, architectural details, wood-engraving, &c., &c. The classes of the Somerset House school are also about to be moved to Marlborough House.

8713. And do you think those scholars would wish to come so far as Kensington Gore?—I think so. I may mention with reference to Marlborough House, as showing its want of accommodation, that the Queen has been pleased to lend it temporarily till the Prince of Wales comes of age, or say one year before that event. It contains upwards of forty rooms, all of which are occupied, and they find it impossible to get on satisfactorily in consequence of want of space. It is owing to that circumstance that the exhibition of cabinet work is taking place at Gore House. They are obliged to put several classes in the same room. The class for training masters is now suspended, there being no accommodation for them to practise. The casts are hung up, some in the staircase, others in the passages, and others in the basement, all owing to the same want of accommodation. The stores for provincial schools are all kept in the cellars now; there are no means of preparing and packing them, and they are getting much damaged. The class rooms are too small, and the museum rooms are much too small The Somerset House school is shortly to be transferred thither, and although some additional rooms have been built, the transfer will add to the want of room. To exhibit the works of the students in the school, it has been necessary to send them to Gore House. With respect to the management, the arrangements are necessarily very inconvenient; the officers being scattered all over the house. In the present year the correspondence of the department is three times what it was before, 1,750 letters having been written in the course of three months.

8714. Lord *W. Graham.*] If the School of Design were erected at Kensington Gore, and the National Gallery remained on its present site, that you would consider to be an additional inconvenience to the students?—Yes; inasmuch as it would place them farther from the National Gallery, to which it is very desirable they should have access. One portion of the National Gallery is at present at Marlborough House, I mean the Vernon Gallery; an arrangement which, however useful to the students there, is very inconvenient to the public.

8715. Mr. *Vernon.*] Will you explain to the Committee what practical advantage you suppose will be gained by the students in the School of Design from their close vicinity to the gallery of ancient art?—Do you mean if the present National Gallery is to remain where it is?

8716. No. I want to know what practical advantage you consider such students will gain by being placed in the close vicinity of the

National Gallery of ancient sculpture and ancient art generally?—They would not gain so much advantage as they might if those collections merely remained as they are at present, without any arrangement according to schools, or the progress of art; but if they are arranged so as to show the onward progress of art, then I apprehend they would be a most valuable adjunct for the students.

8717. Do you think that the advantage which would be gained, would be gained by the instructors or by the students, or by both?—I apprehend it would be gained by all equally, and by the public too.

8718. You assume that at stated periods they would have a portion of time devoted to studying in the gallery; do you intend that they shall take certain courses of lectures in the gallery, or do you simply mean that occasionally they will be able to walk in and out, and test matters of art and education?—I apprehend that it should be made really educational, and that you should give them the means of attending and hearing those lectures, so that they should derive the greatest benefit from having the things under their eyes, and lectured upon on the spot.

8719. Then you propose that facilities should be given to those students similar to those which are now given to students in the National Gallery?—Precisely, speaking for myself personally.

8720. Do you consider that that will improve greatly industrial art in this country?—I certainly have a strong opinion to that effect.

8721. Mr. *Ewart.*] Do you not think that the mere contemplation of the best works of art must improve the taste of the people?—Yes.

8722. Do you not think it desirable, if we get an eligible site for the National Gallery, that the Cartoons of Raphael might be brought to that site?—I am not prepared to answer that question. I may take this opportunity of saying, that with regard to all questions connected with the department of art, such as those that have been put by the Committee, the head of that department is much better qualified than I personally can be to express an opinion.

8723. Mr. *Labouchere.*] Have any applications been yet made by any body or bodies for the grant of a site on this estate?—Within the last few days we have received an application for the grant of a site on which to erect a building for the Royal Academy of Music; and I believe other applications are likely to be made at no distant time. I have the memorial of that academy with me, in which they represent the importance to them of having a site; they consider themselves as forming part of the educational element, and as having a claim to be included in any general scheme; they have an income of 5,000*l.* a year; they propose to erect a building there, if a site were given them. I may perhaps mention, that the Commissioners who made the report, to which allusion has been made, and in which two sites in Kensington Gardens were suggested, went on the supposition that they could not get another site, on the

ground of the outlay being deemed inexpedient; they do not appear to have gone into the question of the eligibility of the two sites, as compared with the other site. They say, "If the outlay necessary for such purpose be deemed inexpedient, it appears to us that no eligible site can be obtained, except by appropriating for this purpose a portion of Kensington Gardens;" and they state, as reasons for choosing the neighbourhood of Hyde Park and Kensington, that it is "an insulated position, where the gallery may be secured from the obstructions to light and air occasioned by neighbouring buildings, and where additional space may hereafter be provided for the increase of the collections, or for other departments of art which it may be deemed desirable to unite with a National Gallery." The space they mention is only from 15 to 20 acres of land; they did not contemplate the possibility of obtaining the very extensive property that the Royal Commissioners have since purchased at Kensington Gore.

8724. Are there not rows of buildings along that side of the road on which the Kensington Gore ground is?—So there are on the site to the north of Kensington Gardens, that the National Gallery Commission referred to.

8725. Lord *Seymour.*] You do not contemplate that more than 15 or 20 acres would be required for the site of the National Gallery?—No; I merely say you secure space and air to a greater extent than you could on a space of 15 or 20 acres.

8726. Of the 86 acres you have bought, supposing the National Gallery were to be removed there, what number of acres, or what space do you think should be devoted to the purposes of the National Gallery alone?—It would depend very much on the nature of the building.

8727. You have not considered that question?—No.

8728. Mr. *Labouchere.*] But there would be no difficulty in giving to the National Gallery any amount of space they could possibly require?—None whatever.

8729. Mr. *Ewart.*] The great desideratum was to get space enough?—That was the object of the Commissioners; there is a space between the roads of about 1,100 feet; and, supposing the National Gallery to occupy 1,000 feet frontage, you would have space for an enormous extension backwards; you are not necessarily limited to the depth taken for the building in the first instance.

8730. Lord *W. Graham.*] Do you think the Commissioners would object to place the National Gallery there by itself, without other buildings?—I apprehend that the public would not be satisfied with such an arrangement, considering the very great extent of ground purchased by the Commission. Their wish must naturally be to make their institutions as useful as possible, and this end would be promoted by placing them in juxtaposition as suggested.

8731. Do you think the public desire the other departments to be connected with the National Gallery?—That is my opinion.

8732. Mr. *Ewart.*] Would there be space for ornamental gardens, and if so, would not their formation be a great advantage to the public?—Certainly; the Commissioners have contemplated that.

8733. Making them of an artistical character?—Yes, they always contemplated that; but the Committee can scarcely form an adequate idea of the extent and capabilities of this site from a mere view of the map; an inspection of the place itself would give a much better notion of the extent of the ground, and the great means it affords of providing for anything that may be required. I may mention, that its extreme length is half a mile, and its average breadth nearly a quarter of a mile; that may give the Committee a general idea of its extent.

8734. Have you any further remarks that you wish to make?—I understand that an objection has been raised to the site, on the ground of its dampness and unhealthiness; I think that that objection is sufficiently answered by the fact that, for the purpose of building the Consumption Hospital, which requires pure air, they pitched on the ground at the back of the Commissioners' property, considerably lower than our estate.

8735. The site at Kensington Gore is not lower or damper than Brompton or Pimlico?—It is higher.

8736. Mr. *Vernon.*] That being all on gravel?—Yes.

8737. And the site of the Consumption Hospital is also on gravel?—Also on gravel.

8738. *Chairman.*] Is it not the case that English consumptive patients are frequently recommended to go to a warm and moist climate?—They require, I believe, a very pure, fine air; such a damp site as this is represented to be would be very injurious to them.

8739. Lord *Seymour.*] Is there any right of way through these 86 acres, or is the ground which has been purchased completely within the power of the Commissioners?—At the present moment there is a right of way across the property.

8740. The question how that right of way is to be dealt with, is now under consideration, is it not?—It is now under the consideration of the Commissioners. I apprehend it will be necessary for them to obtain an Act of Parliament with ordinary powers; but in return for a narrow footpath and dirty lane they propose to give very broad and handsome roads, 80 to 100 feet wide

8740*. Mr. *Ewart.*] Have the whole 170 acres been secured?—No, only 86 acres; the Commissioners pointed out that it was desirable to secure the rest of the property, but Parliament has not yet done it, and unless it is secured at once, the whole space will be taken by buildess at very high prices for the formation of great streets. I may mention

before I conclude that the Patent Commissioners are making a large collection of models and inventions, for which they have provided temporary accommodation in Southampton Buildings, but the space they have is nearly overflowing, and the Royal Commissioners have offered to give them such accommodation as they can.

EVIDENCE of Mr. THOMAS CUBITT.

8741. *Chairman.*] You are an architect and land surveyor?—A builder.

8742. You have heard the evidence of Mr. Bowring, have you not?—Yes.

8743. Have you any information which you think it would be desirable for the Committee to receive in addition to that which Mr. Bowring has already given us?—I think Mr. Bowring has left very little, if anything, to be said upon the subject, but I would make this observation: I have heard the site called to-day a suburban site. I think that term does not quite apply; I think it is positively and essentially a piece of London. There is Hyde Park on one side, but on the other side of Hyde Park there is a solid mass of buildings of a considerable width; to the south side of this ground the space is all filled up with buildings, and on the east side I consider that London has extended itself up to it.

8744. Mr. *Ewart.*] Do you think that London, if I may so say, travels further towards the west, or to what quarter is the tendency of the population to move?—It is difficult to say, for there is but little ground unbuilt on anywhere; this happens to be a large site, but London has extended beyond it; this is in fact a clear space within London. London is carried on westward of this, and although there is some more uncovered ground, perhaps 50 acres might be now got of empty ground, yet in a short time it will be a solid mass of buildings.

8745. *Chairman.*] That is an advantage, is it not, as far as regards centrality, but not as regards the purity of the air?—I do not consider it possible to get any place where you can ensure pure air; I think the greatest probability is, that Hyde Park will be the great opening, and will separate this site in a certain degree from the mass of buildings; the question was, as I understand, where a site could be found, and this seemed to be the only unoccupied site that could be found in what may be called London.

8746. The prevailing winds are from the sonth-west, are they not?—Yes, it is considered so.

8747. Is it not the result of atmospheric observation, that that is found to be the prevailing wind?—So I understand.

8748. Then if a large town were to spring up in a lower direction, towards the river to the south-west of this ground, that would tend to

expose it very much, would it not?—I consider that it has already sprung up; there is no spare space to the south of it.

8749. Mr. *Ewart.*] Is not the south-west at present likely to continue to be the quarter from which the purest air can come, having regard to this site?—There is less interruption between it and the sea than there is from any other quarter.

8750. Mr. *Labouchere.*] Are you aware of any other vacant and available space of any description that is at all accessible from the metropolis, except the public parks?—There is no other.

8751. You have a pretty good acquaintance with the whole metropolis, have you not?—Yes, and I made it my business to look out very much for a site; I know every part all round London.

8752. *Chairman.*] Supposing a large town were to spring up around the National Gallery, assuming it to removed to that site, would it not come to be much in the same state as that in which the present National Gallery now is?—No; because the present National Gallery is more thickly built round than it would be according to the present mode of building; the streets are narrower, the houses are closer together, and it is mixed up with a good many factories; there is no part of old London that does not contain factories; but I consider that a town has sprung up behind Kensington Gore, and if the National Gallery is put there, it will not be a detached piece, but a town will be built round it; and I have no doubt but that before the National Gallery is built many hundred houses will be built to the westward of it.

8753. You do not mean it is a town in the sense in which London is a town, the whole ground being covered with houses; there are intermediate fields, are there not?—There is scarcely anything of the kind.

8754. Mr. *Labouchere.*] What do you think would be the character of the buildings that would be erected in the immediate vicinity of this Kensington Gore property?—I think the probability is that they will be generally large houses.

8755. Do you think it likely that there will be distilleries or breweries, or that even any dense population will be gathered in the immediate vicinity of this property?—I should think it not at all probable that any factories would be erected there; and with regard to the question as to a dense population, I consider that although the ground will be all filled up, it will not be thickly occupied; I think the houses will be large, and the streets will be wide.

8756. Why do you think that?—Because it will answer people's purpose better to lay out the ground in that way.

8757. The ground will be very valuable, will it not?—It is so now.

8758. Was it constantly rising in price, even before the purchase of the estate by the Commissioners?—Yes, for several years it has been rising.

8759. Mr. *Vernon.*] You consider that instead of an inferior you would be likely to have a superior class of houses built in the neighbourhood of the National Gallery, if it should be placed there?—I think there would be a tendency to improve the houses, and that the character of the houses would be better in consequence of this establishment being there; but whether it be there or not, there is no doubt that in a few years the whole ground will be covered with houses, and that, if this ground had not been purchased by the Commissioners, there would have been a great many houses built upon it this spring.

8760. *Chairman.*] Do you think the population of Hammersmith, Brompton, Chelsea, and the contiguous villages in the neighbourhood of that ground, are of a superior class, and that they inhabit houses of a superior class?—No; but I think that the houses in this part of Kensington and in the immediate vicinity of Hyde Park will be a large class of houses.

8761. What reason have you for supposing that, the population who have already gone out to that airy situation being of the middle class, there will be a special exception in favour of the upper class, for this new ground?—Because of its accessibility to Hyde Park, and the certainty the public feel of that park being kept open.

8762. Mr. *Labouchere.*] Are not the houses which have been recently built in the neighbourhood of Prince's Gate of a superior description?—Yes; they extend to a considerable depth, and on the ground immediately to the north of that purchased by the Commissioners in Brompton there are several squares which have been erected within the last few years.

8763. Do you mean Onslow-square?—Yes, and Thurloe-square.

8764. Mr. *Vernon.*] At Prince's Gate, is there not a new square with a new church?—Yes, on the south of the high road.

8765. Are they buildings of a very superior class?—Many of them are of a very superior class.

8766. *Chairman.*] Does not a large increase of buildings and of population of the upper and middle classes necessarily involve a proportional increase of the lower classes, who supply them with the necessaries of life?—To a certain extent the shopkeepers must be provided for; and the shopkeepers would pay a price that would make it answer the purpose of the proprietor of the ground to admit them; but the working classes are not located there; there is no preparation for them.

8767. Are they not generally located in Hammersmith and Knightsbridge?—In Hammersmith there are more than in Knightsbridge.

8768. And Kensington?—Yes, and some parts of Kensington; but I think the lower class of houses in that neighbourhood is diminishing, or at all events not increasing.

8769. Can a large population of the miscellaneous classes get on at all without a proportional amount both of tradespeople and the working

classes?—With regard to the working classes, I think people never consider it necessary for their comfort to have them near them; and as to shopkeepers, they will pay a price to get near where their customers live.

8770. Lord *Seymour.*] In Belgravia, Eaton-square, and that direction, where there are a good class of houses, is there any provision made for the working classes?—No.

8771. When required they come from some distance, do they not?—Yes.

8772. Mr. *Hardinge.*] Do people who live at Prince's Gate feel any inconvenience in getting the necessaries of life from the shopkeepers?—I do not think any classes, either in town or country, experience any difficulty from want of accommodation of that kind; whenever there is a demand there are always persons willing to go and supply it.

8773. *Chairman.*] Is there not a great mass of buildings inhabited by the lower orders at Pimlico, down towards the Horseferry-road and Vauxhall, who have shops for the purpose of supplying their customers with provisions?—There are many shopkeepers round the neighbourhood.

8774. Do you not think that a population such as you allude to would require a large number of shops?—Where there are good houses, shops generally spring up near. Houses for the working population are generally built where ground can be obtained at a low price, and they remain there probably because it is too expensive to buy them out.

8775. Where do you suppose the working classes, whose services will be necessary for the large new town you allude to, some miles from Hyde Park Corner, are to come from?—I am not supposing that there is to be an entirely new population growing up; it has already grown up to some extent.

8776. Are there no working classes among the population there now?—Yes, there are some mixed with the rest.

8777. They will continue there, will they not?—Some may, others will have to go farther off.

8778. That will increase the amount of building to the westward, will it not?—I have no doubt at all that it will be a fully occupied part of London; the whole of Kensington will soon be occupied.

8779. With the usual proportion of buildings for all classes of the population?—No, I do not think so. I think there will be fewer small houses; the small houses are the pioneers of others.

8780. Do you think that even when this ground is covered to the extent you anticipate it soon will be, the National Gallery, supposing it were removed to this site, would have great advantages in point of atmosphere over the site of Trafalgar-square?—I think very considerably

so; it is nearer to the open country, and it has Hyde Park, though all vacant ground will be occupied.

8781. Mr. *Ewart.*] Does your experience and observation lead you to the conclusion come to by a former witness, that the great mass of the smoke of London comes from the eastward and the north-east?—I think the greater number of manufactories are east of London.

8782. Therefore in selecting a site for the National Gallery, is it not desirable to choose one that is open towards the north and east, so that the particles of smoke may subside and fall before they reach the building?—I think it is a very great advantage having the space on the north side occupied by Hyde Park open.

8783. Lord *W. Graham.*] You built the drains in Belgrave-square, did you not?—A great part of them.

8784. Do you consider Belgrave-square thoroughly drained?—Thoroughly.

8785. And do you consider it more difficult to drain the ground at Kensington Gore?—No; it may be drained perfectly.

8786. Mr. *Ewart.*] At Belgrave-square you found a slight covering of clay, did you not?—Yes.

8787. And under that, when it was removed, you found gravel?—Yes.

8788. Is the ground at Kensington Gore of the same character as that at Belgrave-square, or even more gravelly?—I am not fully acquainted with it, but I suppose it nearly the same. Under Belgrave-square there is a depth of from 20 to 30 feet of gravel. I think that in parts of this ground it is likely to be as deep. The whole of London is on a bed of clay, but in most parts there is a stratum of sand and gravel at the top of it.

8789. *Chairman.*] Is the gravel that is described by Mr. Bowring as being spread over a considerable part of this site, gravel of the same kind as that called "Kensington gravel"?—I do not think it is so good, but it is more sandy.

8790. Is not the Kensington gravel on the surface, and do you not come to it at once?—Generally so.

8791. Is there not a considerable stratum of clay in the lower part of the Kensington Gore ground over the gravel?—I am not aware that there is; I think that in some parts there is a clay at the top, but probably there is sand below it; in Hyde Park there are parts where there is no gravel or sand, and the clay comes up to the surface.

8792. Are you not of opinion that the chimneys in stables and offices attached to large houses being below the usual level of other chimneys, cause a considerable amount of smoke?—I think it is a disadvantage; no doubt that smoke is likely to be prejudicial to a certain extent under such conditions.

8793. Mr. *Labouchere.*] Have you formed any opinion as to the comparative convenience of the two sites of Trafalgar-square and the newly purchased estate near Kensington Gore, for the site of the National Gallery?—I fancy that with regard to the upper classes, the proposed site is a better one than that of Trafalgar square. With regard to the working people, I think it is a vast advantage, its being near Hyde Park. I think very few people leave their work to go the Museum, or go to any sight, such as the National Gallery, and then return to their work again; I think they would rather prefer taking Hyde Park as a part of their amusement, making out their day, or part of a day, with a walk through Hyde Park.

8794. You think that the cheerfulness of the situation, its vicinity to the Park, and its having gardens about it, would altogether make it more attractive to the working classes, than a building situated in the middle of the town?—I think so.

8795. Mr. *Ewart.*] You are very conversant with the working classes, having a great number in your employ, and therefore you speak from experience on the subject?—Yes.

8796. *Chairman.*] Is it not the case that when the working classes go out for the special object of seeing some interesting collection, such as that at Hampton Court or the National Gallery, they are more likely to profit by it when they have to go a little distance, and make a day of it, than when they have it near at hand, and it seems a common-place object to them?—I think men do not like to go from their work immediately to see these sights; they usually clean themselves, and make a little preparation, and I think that going a mile or two to a place where there is a more cheerful look-out for them, and which is in a better vicinity, is more likely to be attractive, and that they would be likely to go oftener than they do to the National Gallery in its present site.

8797. Lord *Seymour.*] You employ a great number of men?—Yes.

8798. Do you know whether your men attend at all at the Museum of Practical Geology?—Many of them have done so; I think they find great pleasure in getting admission to the lectures, and many of them attend.

8799. Mr. *Labouchere.*] Is there an increasing disposition among the working classes, in your opinion, to visit collections of art?—I think the tendency is generally towards their improvement.

8800. Lord *Seymour.*] Do you think that those persons who attend lectures at the Museum of Practical Geology, for instance, would be inconvenienced by going for such lectures to Kensington Gore?—With regard to lectures, I could hardly say to what extent they would attend them.

8801 Do you think that for the purpose of sight-seeing (that is, going for a morning's pleasure to see a museum or a collection of pictures)

there would be any objection, as regards the working classes, to their going to Kensington Gore instead of Trafalgar-square, or do you think it would rather be an advantage to them?—I think it would.

8802. Mr. *Vernon.*] I presume your opinion, that they would be equally willing to go out there as to go to a gallery in a more central position, supposes that there shall be some surrounding open ground, an agreeable garden, or some object of that sort, which should make the building more airy and more pleasing to them, mentally as well as physically?—I am supposing that on this large site the buildings in which collections are to be formed will be detached, and that there will be considerable space for ornamental grounds; but I consider that Kensington Gardens and Hyde Park, if there were nothing else, would be a great attraction; but more ornamental ground in addition would be of great advantage.

8805. Mr. *Ewart.*] Have you any further remarks to make to the Committee?— There was a question asked about the levels; my idea would be that the ground at Kensington Gore should be nearly laid out in one straight line from the road, by the side of Hyde Park. I would make one slope of it; the fall of that would not exceed one uniform fall of one-and-a-half or two per cent., whereas Regent-street and St. James's-street are perhaps three per cent.

8806. Lord *W. Graham.*] Would you raise the surface of the earth?—I should fill in the centre part so as not to make it a level, but what we should call a hanging level; so as to make it uniform.

EVIDENCE of Mr. PENNETHORNE, Architect to the Board of Works.

8851. *Chairman.*] You are favourable to the site proposed on the Kensington Gore ground towards the road?—Yes; the site of Gore House, taking all the circumstances together, appears to me much the most eligible.

8852. Do you not consider that the centre of a great open space of park or forest, with the advantage of a constant free circulation of air, and the distance of the houses a quarter or a third of a mile on all sides, would be almost indispensable conditions of obtaining all the advantages you wish in the removal of the gallery;—Yes; but if the new site is properly managed, you will have all those advantages sufficiently for every purpose; the galleries would be entirely open to the north and south, and on all sides would rise considerably above other buildings.

8853. Will you state the grounds on which you hold that opinion?—I know nothing whatever respecting the intentions of the Exhibition Commissioners, and I have not communicated with any person upon the subject; all I could do was to prepare myself for this Committee in regard to quantities. This (*producing it*) is a plan of the ground, and that (*producing another plan*) is a plan of a square portion of the

ground as it is proposed to be laid out by the printed plan. There is a small wedge of property which has not been purchased; on the other hand, there are several parts of outlying ground that would not be necessary. If the new site were to be adopted, it would be absolutely necessary, I should say, to buy up the greater part of that wedge of buildings; perhaps not all at first, but it would be very desirable that at some future time all should be purchased; it would not be a good national work without buying all.

8854. Would not this plan occupy by far the greater part of the Kensington Gore site exclusively for the accommodation of the gallery? —No. That (*pointing it out on the plan*) shows the gallery; the white shows a space of about 10 acres of ground, with a gallery in the centre of it 600 feet long and 300 feet wide, which would give on the picture floor nearly 10 times the accommodation there is in the present gallery.

8866. Do you not see any objection arising from the likelihood of rows of houses springing up in the vicinity of the National Gallery?—No. First of all I should say, with respect to the gallery, that, to look well, the platform on which it is built ought to be raised above the level of Hyde Park; that is, eight feet above the level of the Knightsbridge road; then the platform level of the building would be 68 feet above Trinity datum; and as the level at the south end of the ground is only 25 feet above the Trinity datum, nothing could be more imposing than the effect would be of a lofty and rich architectural façade 600 feet long, facing the south, rising from a platform nearly 40 feet above the level of the entrance gates, and approached by a succession of terraces; the distance also is so great that the ascent for carriages would be only 1 in 50.

8867. Lord *W. Graham.*] You have placed the building just about where the clay comes, have you not?—I do not think that would be of the least consequence, if the building were raised upon vaults eight feet above the road, or 12 feet above the present surface.

EVIDENCE of Sir RICHARD WESTMACOTT, R.A.

9023. *Chairman.*] Have you considered at all the expediency of removing the National Gallery from its present site to some other situation where room might be afforded for a combination of the collections?—Certainly.

9024. Have you considered it?—I have, and I think that not only with regard to the pictures, but even with reference to the sculpture, what with the smoke of London and the dirt from the flues, (for that is a thing that must be seriously looked into in any gallery that is built, because you may have as much dust from the flues as you have soot from smoke,) if the pictures are removed to a place, say a mile or half a mile, where you could be insured that they would not suffer from the influence

of any smoke, it would be a vast advantage to them and a great advantage to sculpture.

9025. You think it would be an advantage to the pictures if they were removed to a place some distance from their present site?—Yes, some distance from their present site.

9026. Do you think that the effect of removing them would be to create an inconvenience to the persons who now go to the gallery for the purpose of study?—That is a very difficult question, for I believe that a large number of the young men who now go to the gallery for the purpose of study, live on the other side of the river, and some at Hampstead; they come to the gallery for perhaps six hours. I do not think that the walk to and from the Museum does them any harm, and I think whether they go to the Museum or to Kensington, it would make very little difference.

9027. You think that the inconvenience to persons who frequent the gallery for the purpose of study, would not be great if the gallery were removed?—Certainly not.

9028. Have you talked the matter over with any person, so as to be able to form anything like a confident opinion on that subject?—I believe there is a general opinion that the pictures should be removed; I think that is a pretty general opinion. I have not talked with them upon the subject of the removal of the sculptures.

9029. Do you consider that a gallery, for the purpose of the arrangement of the collection of pictures, requires a much larger space, in the same manner as you have said the sculptures require a larger space?—Certainly; whatever building is adopted should be upon the principle of a telescope, so that as you required more room you should be able to extend the building without injuring the effect of it; that will be the case with respect to sculpture, I have no doubt, because we must recollect that in Asia Minor very few cities have been examined, and those few which have been examined have been very beautifully given in the work of the Dilettante Society. I do not suppose there have been half-a-dozen cities examined in Asia Minor, and I have very little doubt that if you were to examine the mounds you would find a great deal of sculpture, and so in the Grecian Islands; there you would have a chance probably of getting a higher class of art than you have in Asia Minor, because it would be most probably the Roman art that you would get in Asia Minor; but I have no doubt, from what I have seen in the British Museum (and I speak from the last 20 years), that there must be, at least, between 400 and 500 feet more added to the capacity for the collection than there was, and that will go on I hope.

9030. Lord *W. Graham.*] Do you mean square feet or in length?—In length; an impetus has scarcely been given until within the last 20 years; it is not more than 40 years, I think, since Mr. Townley's collec-

tion was purchased by the country, and you see what has been done in those 40 years; our taste has improved, our manufactures have advanced; everything has shown, as clearly as possible, the connexion of the arts with everything that is civilized.

9060. Mr. *Hardinge.*] Do you think, assuming that a school of design could be combined with a national gallery of painting and sculpture, that students of that school of design would derive great benefit from the contemplation of works of the old masters, or otherwise?—That is so large a question that I do not feel capable of considering it; because, whether the principle which is adopted in the school of design is right or wrong, I do not offer an opinion; it is in the hands of other people. My notion is, that there is but one way to acquire excellence, and that is by studying the antique; whether the student is to be an ornamental carver, or whatever part of art or manufacture he is to take to, he should be well grounded in the first principles of art; then let him go to what he pleases, he will always do it better.

9061. Have you usually found that those students who have studied from the casts in the British Museum have turned out well when they have been transferred to the school of design?—Always better; they will always make more effective artists.

9062. *Chairman.*] You have stated that, in your opinion, it is desirable to combine with the National Gallery the collection of sculpture and antiquities: do you think it desirable to combine a collection of prints in the same building?—I think prints and pictures should be together, undoubtedly.

9063. I do not speak of original drawings, but of prints?—I think that prints belong to the painter; he is always referring to prints, and so does a sculptor, very often.

9064. You think, then, that the collection of prints should also be removed?—I think the print room ought to go with it; I think they belong to art.

9065. With it also there must go a considerable library, for the purposes of study; all books connected with art must also be combined in such a building, for the purpose of reference on the part of students, must they not?—It would be a very desirable thing if there were a small library; I should think that 300*l.* or 400*l.* or 500*l.* would be quite sufficient for the purpose; that would obtain all the works that artists could require.

9066. If you remove, for instance, all the coins, would it not be necessary to have there also such books as persons coming to study those coins would wish to refer to?—Certainly, the books belonging to the coins.

9067. That would add also to the library considerably, would it not?—Yes; but I conceive that very few books are necessary for the artist.

9068. You think a library, for the purposes of art, need not be very large?—No; I should say 500 or 600 volumes is as much as they can require.

9069. Mr. *Vernon.*] Do I understand you to say, that in your opinion for students in art, it is not very material whether the collection of sculpture is in one part of London, or in another?—My object is to get it out of London.

9070. I wish to confine you strictly to this one point: taking into consideration the places of abode, as far as you are cognizant of them, of the younger students in art, do you consider that it is not very material to them, whether the sculptures are in Trafalgar-square, the British Museum, Hyde Park, or Kensington Gardens?—I think it is a very material thing that they should be removed to Kensington Gardens, or to a distance, in fact.

9071. I merely wish to know as to the convenience of younger students in art?—I have said, I think, in answer to a question from the Chairman, that I cannot conceive that an artist can complain much of having to go as far as Kensington.

9072. Do you believe that, practically taking into consideration, as I have said before, their places of abode, as far as you are cognizant of them, they will, as a body, have to go farther, or be put to greater inconvenience by going to Kensington, than they would by going to the British Museum?—No, I think not; and if they do, I take this into consideration, you may consider the convenience of artists, but you must consider also whether you will have any pictures, or any statues fit to look at; if you do not remove them you will not have a picture worth looking at shortly.

9073. *Chairman.*] You think the pictures are so injured by the smoke and dirt, in their present site, that they must be removed?—They must be removed; because in addition to the common soot of London there are two very powerful engines for wash-houses, or some other purpose in the neighbourhood, pouring volumes of smoke down upon them.

9074. Mr. *B. Wall.*] Mr. Hamilton stated in his evidence that he thought it would be of no use to remove the Elgin Marbles, if they are removed to any distance short of Hampton Court; is that your opinion?—No; Hampton Court would be a long way off.

9075. How far would you think it necessary to remove them, in order to secure them from the smoke and dirt of London 50 years hence?—That is a question I can hardly answer. I do not know what they may do round London 50 years hence. If you can secure a place removed from houses, and with a sufficient area to keep off the smoke of London, you will do well.

9076. Should you be satisfied with the sculpture and pictures being removed to Kensington Gore?—Indeed I should; it is so much better

than the places they are now in, that I think it is a very desirable thing. I could desire that they were farther off still; but there are considerations with regard to the young men who are to study these things; you must not take them too far from them.

EVIDENCE of Sir WILLIAM CUBITT.

10128. *Chairman.*] You are one of the Commissioners of the Great Exhibition of 1851?—I am.

10129. You took part in that capacity in the purchase of the ground at Kensington Gore?—Yes; that was the first ground we bought.

10130. Can you mention the extent of the ground; it has been stated by the Secretary to be about 86 acres?—That is about the amount that has been already purchased.

10131. There is an allusion made, in answer to question No. 8740*, by Mr. Bowring, to an extension of ground, which would make 170 acres in all; is that the case?—We have no means of doing that at present.

10132. Is there any reason to suppose that there is either ground sufficient in that neighbourhood available for the purpose, or that there is any intention on the part of the Commission to purchase ground to the amount of 170 acres?—Not that I am aware of; I believe we could have purchased 170 acres, had we had the means at the time.

10133. Lord *Seymour.*] Eighty-six acres have been purchased, as I understand?—They have.

10134. Were those 86 acres purchased solely with the money of the Commissioners, or were they purchased by the contribution of Government, together with the money of the Commissioners?—It was a joint contribution; the Commissioners found 150,000*l.*, and the Government another 150,000*l.*, the whole of which is not quite expended.

10135. Then those 86 acres altogether have cost nearly 300,000*l.*?—Very nearly.

10136. *Chairman.*] Then there are at this moment no disposable funds for increasing the purchase to the extent alluded to of 170 acres, nor is there any actual intention of augmenting the ground to that amount?—No; the feeling is that the Commissioners, with the assistance of the Government, have now obtained as much land as they originally proposed to buy, although they pointed out that Parliament would do well to purchase the whole of the unoccupied ground contiguous to their own purchase.

10137. Mr. *Ewart.*] Was there not an ulterior object proposed at first, that the Commission contributing a certain portion of land purchased out of the surplus of the late Exhibition, the Government were to furnish an equal portion?—Yes? that whatever we could supply out of the surplus, the Government should meet with an equal sum, and that has been done.

10138. Mr. *B. Wall.*] There having been 86 acres purchased already, the other 84 acres to make up the 170 acres, would probably cost 300,000*l.* more; those 170 acres being contemplated by the Commissioners to be a sufficient quantity of land for the purpose of moving the gallery to Kensington Gore, supposing the gallery to be moved there?—My feeling is, that there is room enough for the gallery at Kensington Gore now.

10139. Upon the 86 acres that have been purchased?—Yes.

10139*. Then why did the Commissioners propose to purchase 84 acres more, if those additional 84 acres are not wanted for public purposes there?—I have not said that the Commissioners did make any proposition for such a purchase with their own funds; I am not aware that they did. I have heard the purchase talked of, but I never was present at any meeting of the Commissioners at which a proposition of the kind was made.

10140. Then this proposition, I understand you to say, was never before the Board of Commissioners at all?—Not for the purchase of 170 acres.

10141. Mr. *Ewart.*] Is there any such condition expressed in a report that was made?—Not that I am aware of, except in a hypothetical manner.

10142. Lord *Seymour.*] The Government having contributed 150,000*l.*, and the Commissioners having contributed an equal sum, is there any sub-division of the property, so that now it could be ascertained which portion actually belongs to the Commission, and which to the Government, or do they hold it jointly?—They hold it jointly, and many Members of the Government are also Commissioners.

10143. *Chairman.*] Is it not understood that, although nominally and in courtesy the surplus from the Exhibition is mentioned as money belonging to, and appropriated by the Commission, yet virtually it is Government money, like that advanced by Parliament?—They both stand in the same predicament.

10144. That is to say, the Commissioners could not have applied that money to any purpose without the sanction of Government?—Certainly not, as regards the joint property.

10145. But if Government intended to apply it to a purpose different from the Commissioners, the Government would be fully entitled to do so?—I do not think so.

10146. Then you do not consider that the surplus was intended to be at the disposal of the Treasury or the Chancellor of the Exchequer?—No; it was at the disposal of the Commissioners themselves, until they entered into the arrangement with the Government to meet it with an equal sum.

10147. Lord *Elcho.*] Would it have been in the power of the Commission to have spent that sum of money for any purpose they thought

fit, without consulting the Government?—Certainly, we have a right to do what we please with that surplus.

10148. Lord *Seymour.*] In whom now are the 86 acres vested?—In the names of the Royal Commissioners.

10149. The Government having paid half the money, the whole of the property is vested in the Royal Commissioners?—Under certain conditions. They cannot act independently of the Government in the disposal of the property. If they had bought the property alone, and kept it to themselves as Commissioners, they might have done so; but that did not appear likely to answer so good a purpose.

10150. Mr. *M. Milnes.*] Do you understand that, supposing that site not to be accepted for any national purpose, the Commissioners will not be able to dispose of the property again as they think fit?—It would be necessary that there should be a mutual understanding come to before they could do so. The whole of the 86 acres now stands as it were joint property.

10151. Mr. *B. Wall.*] Were the negotiations that took place between the Commissioners and the Government upon the subject brought formally before the Commissioners at their meetings?—Yes.

10152. Have you any objection to lay any report of the proceedings which took place at those meetings before the Committee?—They all came before the Committee of the Commissioners, and the results came before a general meeting of the Commissioners; the terms were settled by the Government of the day.

10153. Have you any objections to state whether there was any difference of opinion among the Commissioners, or whether their decision was unanimous?—Their decision was unanimous; we never had any division in the Commission.

10154. Mr. *Ewart.*] Under what common name or title are the Commissioners and the Government who assented to the proposition of the Commissioners, now combined?—The members both of the former and of the present Government who have acted in this matter are all Commissioners, possessing the same rights as the original Commissioners, and they are all formed into a corporation.

10155. *Chairman.*] I understand the fact to be, that the purchase made in the first instance by the Commissioners of their portion of the property was made before the grant of the extra sum was acceded to by the Government; is that so?—Yes; we bought the Gore House estate, and agreed for the purchase of Baron Villars's estate, which took the whole of the money we had to spare.

10156. You took upon yourselves the risk of that, assuming it to be a step which would ultimately be approved of and ratified by the Government?—Yes; we fully concluded that it would be approved of and ratified by the Government; indeed, we had a consultation with the Government in the first instance.

10157. Lord *Elcho.*] Which portion of the property was purchased first by you?—The Gore House estate.

10158. Then the portion that belongs at present to the Commission is the whole of the frontage, and the portion purchased by the Government is that part which is behind?—There is no part that belongs separately to the Government or to the Commission.

10159. But the first purchase made by the Commission was the frontage, the Gore House Estate?—Yes.

10160. What is the extent of that frontage?—Six hundred feet.

10161. Mr. *B. Wall.*] Will you have the goodness to point out to the Committee the 84 acres which it has been proposed to purchase in addition to the 86 acres already purchased?—This is it (*pointing it out on the plan*).

10162. Is the whole of that property held under one proprietor?—No; there are several; we bought the whole of Baron Villars' estate.

10163. *Chairman.*] Will you have the goodness to explain to the Committee what were the circumstances which induced the Commissioners originally to make that purchase, and the circumstances under which the purchase was made?—The object was to find, if possible, sufficient ground in a good situation for the purpose of a centre for industrial art and industrial science; that was the leading star of the whole.

10164. Was there any recommendation or suggestion made to the Commissioners by the Government, or by any public or authorized body, that it would be desirable to obtain ground of that description?—It originated with the Commissioners themselves as soon as they found that they had a surplus.

10165. They conceived that there was a feeling on the part of the public that it would be desirable to unite a number of public institutions in one locality, and they thought that a good mode of expending their surplus fund?—Yes, we came to a determination to spend all the surplus we had, or all the money we could get granted, on ground suitable for the purpose we had in view.

10166. The idea originated with the Commissioners themselves?—Yes.

10167. Had that any special reference to the recommendations of former commissions or committees employed specially to look out for sites fit for the National Gallery?—We always understood that it would form a site for a national gallery, if those who had the management of a national gallery so wished; we always held ourselves in readiness to give up any portion of that land for those purposes, and we do so now.

10168. Were there any other sites that appeared to be eligible offered to the attention of the Commission about the same time?—No, none that we could deal with, for our ideas were rather large; we thought we could

manage about 100 acres, and had the land been cheaper we should have bought more; we did nearly agree for some, which we afterwards had to give up again.

10169. Will you have the goodness to mention to the Committee what sites were examined on the part of the Commission, and afterwards given up?—There were none suggested to us which we had examined, and which were afterwards given up; whatever suggestions were made we made ourselves.

10170. Mr. *Ewart*] Can you produce to the Committee the original document by which you made your proposition to the Government?—I have it not here; but had I known the Committee desired to see it, I would have brought with me a book containing all the minutes of the meetings of the Commissioners, and I could have read any extracts from those minutes that might have been considered necessary to elucidate the proceedings of the Commission.

10171. *Chairman.*] In purchasing this ground was the question of the especial adaptation of any portion of it to the purpose of a national gallery at all taken into consideration?—Yes, so far as discussion and conversation went.

10172. Did that discussion involve the question as to the expediency of combining sculpture and painting?—The question of a national gallery in a general sense was considered.

10173. That is, the combining of collections of sculpture, antiquity, and fine art generally, with the collection of the National Gallery of paintings?—So I always understood, and we also proposed that there should be (as I suppose eventually there will be) a national school of design, such as that which exists now in a smaller degree at Marlborough House.

10174. Was it considered essential that that combination should take place, or in the event of that combination not taking place, would they still have preferred that site for the National Gallery of Paintings, although the other collections might remain at the British Museum and elsewhere?—We always supposed that it was a good site for a National Gallery of Paintings, and I think it is so as far as I am able to judge of such things, as I know of none so clear of buildings to be had about London.

10175. Even if the National Gallery were not to be united, the Commission, you apprehend, would still consider it desirable to remove the National Gallery of Pictures to that site?—I think that would be the idea of the Commissioners; in fact, the Commissioners did everything they could with a view to the advancement of art in its best sense.

10176. Can you state how many other institutions it was proposed to collect upon the same site?—Speaking of chartered institutions like the

Royal Society and the Astronomical Society, I do not know how many there were; there might be perhaps four, or possibly more than that.

10177. Lord *Elcho.*] Besides the four chartered institutions to which you have referred, I understand you to say you intended to make it the centre of industrial art and industrial science; did you mean to transfer the School of Design from Somerset House to that site?—Certainly.

10178. Any other institutions?—The School of Design chiefly regards art, but our scheme embraces schools of scientific industry; in fact, the site would be the nucleus for study of all objects of art.

10179. You say there would be four chartered institutions such as the Royal Society?—I say that there might be, not that there will be.

10180. Would they occupy a considerable space of ground?—No, our supposition always was, that the institutions that came there would form altogether a building with apartments suitable to each, and accessible to a good library and philosophical apparatus.

10181. Was it intended that there should be several buildings, or one large building only?—We never got so far as to intend buildings of any kind; the question is a general question; there may be, and if the thing goes on there no doubt will be, buildings erected there, but that would be done not by the Commissioners, but by the parties for whose benefit they were intended; all the Commissioners have done, or can do, is to find the means of having them, and if the parties who are more interested and the Government think fit to have them, that is their affair.

10182. You say the design was merely to afford the parties interested the opportunity of there being connected together on one spot a great industrial art and scientific institution, or institutions; have the parties interested, to whom you allude, received that proposal favourably, or otherwise?—Some have received it favourably, and some unfavourably; some of them do not like removing; some say that Kensington Gore is too far west. My answer to them is, that if that is not the right place now, it will be so in a few years; and that it will be the centre of all the élite of the metropolis connected with art.

10183. Are you aware whether the chartered societies to which you allude have or have not declined to remove their collections to Kensington?—We have never entered into any negotiations with them. They have some of them sent us memorials and resolutions, telling us we are too far off.

10184. Is the effect of their resolutions, that they would rather remain where they are?—No; none of them are content to remain exactly where they are. There is no other place I could mention, possessing equal advantages, that they could have on such terms; and as to the distance, I am of opinion that that objection will vanish altogether within 20 years.

10185. Do you think it suitable for schools of design?—I think so; and it will become more and more so every day.

10186. You do not think it too far removed from the centre of London? —No; because it will be the centre of the best part of London, in the the course of a few years.

10187. Do you mean by that to say, that in the direction of Kensington there will be many buildings, streets, and squares erected which do not now exist?—They will be erected wherever there is room for them, and they will be the best kind of houses.

10188. Is there at present unoccupied ground to the westward of the ground you have purchased, which you think is likely, in the course of time, to be built on and inhabited?—Yes; but the whole of the property in that neighbourhood will be so valuable, that none but the best class of houses will be built upon it.

10189. You anticipate, do you not, that there will be buildings erected to a considerable extent to the westward of the site you have purchased? —I do not say to a considerable extent; but there will be some building, no doubt.

10190. Do you think that the objections which are now made to the site of the present gallery, in consequence of the smoke which proceeds from the buildings surrounding it, will hold good with regard to this site in the course of time, when, as you describe it, the ground which is not at present built on is covered with buildings and inhabited?—The two cases are not at all the same. The Kensington site never can be in the same predicament as the site of the present National Gallery, which is surrounded by factories, gas works, and things of that kind; that state of things never can exist at Kensington.

10191. Are there at present no factories at Kensington?—None except floor-cloth factories, which are matters of no consequence, as far this question is concerned.

10192. Do you think that the buildings likely to be erected on the present unoccupied ground will not be of a character to emit great quantities of smoke, such as baths and washhouses and other things, in the neighbourhood, of the National Gallery?—Yes.

10193. Mr. *Vernon.*] Are there not some chemical works in that neighbourhood?—Not that I am aware of.

10194. Mr. *B. Wall.*] Would you not be one of the first to recommend the erection of baths and washhouses?—Yes; they are highly necessary no doubt; but I should mention they do not emit large volumes of smoke like manufactories.

10195. In building your gallery at Kensington, you would bring a working population about it, would you not, who would need that convenience in the one district that is given in the other?—No; I think that

baths and washhouses are not likely to be required in the neighbourhood of our land at Kensington Gore as they are in Seven Dials.

10196. Mr. *M. Milnes.*] Would not the houses that would be built in the neighbourhood of Kensington Gore be likely to be such as would be inhabited principally during the summer time, and which therefore would not be likely to produce so much smoke as houses in the more populous parts of the town?—Yes; they would be the best class of houses, such as those at Prince's Gate, which are of a very superior kind.

10197. Mr. *B. Wall.*] Do you not think that, generally speaking, there is great hardship in making it necessary to remove the population of one district to another five or six miles off?—I do not contemplate that anything of that kind will be done.

10198. Do you not think that the necessary consequence of removing the schools of design, and institutions of that nature, to a very much greater distance from the population that now makes use of them than they are at present, would be a hardship upon them?—I can scarcely say, but it must be remembered that it is not five or six miles to this site.

10199. How, for instance, would the population of Spitalfields, a population eminently in want of instruction in design, be benefited by the removal of the School of Design three miles further off from them than it is at present?—They would be in the same position as the schools of design in other parts of the kingdom.

10200. Mr. *Ewart.*] And there is a local school at Spitalfields at present, is there not?—Yes; and that would remain in connexion with the principal school.

10201. Mr. *B. Wall.*] Then it would be only the removal of the staff, and not the removal of the population, that you contemplate;—Certainly; the principal school of design would be in my mind something like an university, and there would be schools in connexion with it all over the kingdom.

10202. Mr. *Ewart.*] It would be a central school of design?—Yes; that is what we always contemplated.

10203. Are you aware that that was recommended by the Committee of 1836?—No.

10204. You do not know that it was recommended that there should be a central school in London, which should radiate and be in connexion with other schools in the country?—No, I was not aware of it; but that makes our case stronger; we desire to prepare for such a thing.

10205. You have said something about your original plan of treating with the different institutions you have mentioned; having heard that some of those learned bodies dissent from and disapprove of the proposition for their removal, what is your present plan?—We have no plan.

10206. Have you ever contemplated what would be the probable extent of the buildings that would be necessary for all the various institutions?—There would be very few buildings necessary.

10207. You have no definite plan, I understand you to say, at present? —No. Somerset House is but one building, though it is used for a variety of purposes; we do not propose to build; questions are put to me as if we proposed to do certain things, whereas the fact is we propose to do nothing but find the ground.

10208. You have no definite plan at present?—No.

10209. You have no definite idea of the number of institutions that it would be proper to combine with the National Gallery?—No.

10210. Mr. *B. Wall.*] Did the Commissioners cause the soil to be examined by competent authorities?—We knew the soil generally; it is gravel, with very little clay.

10211. Do you consider it a dry soil?—Yes, very much so.

10212. Is it not a very shelving piece of land?—No.

10213. How much of the 86 acres you have purchased would be called table land, upon which there would be the power of building on a flat surface?—Very little, except the lower part; the lower part is flat.

10214. That is the part which is the furthest from the road is it not? —Yes; no part of the land falls very much, but is very well adapted to forming terraces.

10215. Mr. *Vernon.*] Although the Commissioners contemplated a larger scheme, are you able to say whether or not they would object to any portions of this land being given up for a gallery of pictures, or for a school of design alone, without any other institution being added to it?—The land could be given up for any particular purpose, but there is no one thing that would take 80 acres of land, or even 50.

10216. Assuming it to be considered desirable to place a gallery of pictures or sculpture there, and that it was desirable that it should be sufficiently isolated from surrounding buildings to be secure against smoke, do you believe that the Commissioners would be prepared to give up a sufficient portion of the ground they now possess for that one specific purpose?—That would depend on circumstances, which I cannot at present foresee. I think they would be quite ready to give up a sufficient quantity of ground for the erection of a most excellent National Gallery, or any building of that kind; I feel no doubt upon that subject.

10217. I take it for granted, that having purchased so large a property with a view to a more extended scheme, they would not be willing to devote the whole of that property to any one portion of that scheme?— That would not be carrying out the whole of our ideas.

10218. *Chairman.*] Is it not the case that the portion of the ground which has been considered best adapted to the purpose of a national

gallery is the frontage towards the road?—We have always supposed that if a national gallery is to be erected there, it would be next the Kensington-road.

10219. When you spoke of a piece of ground being obtained for the National Gallery, which should have a sufficiently open space about it to dilute and purify the air, do you think that the breadth of ground you would have there would be sufficient to guard against the influences you would wish to escape from?—Yes. There need not be other buildings within a considerable distance of it.

10220. What frontage have you to the road at present?—About 600 feet.

10221. What do you suppose would be the length of the frontage of the building you would erect?—I cannot answer that question.

10222. Do you think that a frontage of 600 feet would give you sufficient space to erect a handsome building, and yet leave space enough on each side to purify the air that came from the surrounding buildings?—Quite. It would be entirely open in front, and almost entirely open at the back.

10223. Mr. *B. Wall.*] Would not the building being brought nearly flush with the road render it very subject to dust?—It would not be necessary to bring it within 400 or 500 feet of the road.

10224. If you put it back from the road, would it not then be placed on shelving land?—Yes; it would be on shelving land; but no man would erect a building on shelving land, with the door-sills level with that land. It would be built on arches and groins, and it would have the benefit of excellent terraces, which would be a great advantage. The land is well laid out by nature for it.

10225. In what part of the ground would you consider it most desirable that the National Gallery should be placed, supposing it to be built in the situation to which you refer?—I think the Gore House estate would be the best for such a purpose.

10226. Lord *W. Graham.*] What width would you get by going 400 or 500 feet back?—We should then have altogether about 800 or 900 feet in width.

10227. *Chairman.*] If the Commissioners were to purchase the narrow wedge, which at present has not been purchased, would it not be necessary to pull down the houses that are built upon it, in order to avoid the smoke or other influences they might create?—We should pull down all the houses built on that narrow wedge. We are now making bargains for a great deal of property along that road.

10228. You would pull down those small houses?—Yes.

10229. Are not some of them very valuable houses?—No; the only really valuable houses are those in a large terrace fronting the Kensington-road. They would not come down; they would remain as they are.

Those are houses the smoke from which would never do any harm to the National Gallery.

10232. Mr. *Ewart.*] If the building were carried 400 or 500 feet back, it would be amply protected, would it not, from the too great proximity of those houses?—Yes.

10233. Has it ever entered into your consideration in making plans, or do you think it desirable, that ornamental gardens for the recreation of the public should be formed in the neighbourhood of the buildings?—We always contemplated laying out all the ground that was to spare, until it should be wanted for public purposes, in an ornamental manner for the use of the public.

10234. You never can want to occupy the whole space for buildings?—No.

10235. The intermediate space might be laid out for the recreation of the public as ornamental gardens?—Yes; such has been our intention.

10236. Has the price of land risen much in the neighbourhood since you made your purchase?—Yes.

10237. Can you give us any idea how much?—Yes; when we began to purchase we could buy for 3,000*l.* an acre, and now we cannot for 5,000*l.*

10238. Therefore, as an investment, this was a very good purchase?—Yes; I think we shall take no harm from it.

10239. Mr. *M. Milnes.*] You are losing the interest of the money all this time, are you not?—Yes; we have some few rents coming in.

10240. The amount which you receive in rent is very small, is it not?—It is not a great deal; I do not know how much.

10241. Lord *Elcho.*] Do you think there is any probability of the Government, or of the Commissioners, at any time getting possession of the whole of the wedge of which you have spoken?—Yes; we ourselves propose going to Parliament to enable us to do so.

10242-3. You propose to go to Parliament for power to purchase the whole of that wedge up to the road?—Yes; we propose to apply for an Act of Parliament to purchase the fee, and then to deal with the leases as time and circumstances would allow. We should wish to do away with the temporary buildings, of which there are a great many there.

10244. *Chairman.*] So long as you have that row of houses along the road, the leases of which are for 60 years, you never could avail yourself of the ground behind those houses for the front of the gallery?—No; but I think it likely that the gallery would be built in such a way, as to admit of extension at a future time; you would build a gallery suitable for present purposes, with means of extending it ultimately.

10245. Supposing a new gallery of such an extent, and of such beauty, as has been contemplated, to be built at Kensington Gore, do you think it would look seemly to have a long row of private houses in its immediate

neighbourhood?—It might not look seemly in the first instance, but it would when the whole came to be completed.

10246. Mr. *Ewart.*] Even if those houses were left standing?—Yes.

10247. *Chairman.*] The wind sets generally in this island from the south-west, does it not?—Yes, the prevailing winds in this country are from the south-west.

10248. And the buildings that would be erected in the neighbourhood of this ground would also be chiefly to the south-west, would they not?—There would be buildings on both sides of the ground, because the building property we have here is so exceedingly good.

10249. It was stated by another witness, in answer to question No. 8613, that the mischief from atmospherical influences came chiefly from the north, and that it was considered by the Commissioners in making the purchase; is that your opinion?—I cannot give a definite answer to that question; I think it is a great advantage, its being clear to the north, or on any side.

10250. When the wind sets from the east, the great mass of smoke comes from the densely populated part of the city, does it not?—Yes, when it is in the east, but it is less in the east than in the west, therefore the buildings there would be well situated with reference to the prevailing winds.

10251. If a large city were to spring up there, or if, as Mr. Cubitt says, it already exists to the south-west of Kensington Gore, you would get a good deal of smoke from that quarter, would you not?—You would have such smoke as houses give, but that is very different from the smoke that is produced by manufactories or gas works.

10252. Do you consider it would be necessary, in case of this great scheme being carried out, and these numerous public institutions being established upon that ground, that there should be a thoroughfare through Hyde Park to enable persons living on the north side of London to obtain convenient access to them?—I think so; and I think there are ways and means of doing that which would prevent its being such a nuisance as to make it undesirable to do it.

10253. What plan have you proposed?—I have proposed no particular plan; it might be either above or below the ground, but I think the most seemly thing would be what they call a ha-ha, or sunk road, with a walk or slope on each side, planted and well fenced.

10254. You would have that go through the centre of the park?—I would not say through the centre of the park.

10255. In what part would you propose to make it?—I think about the place where the road now turns off; near what was the end of the Great Exhibition.

10256. When I speak of the centre of the park, I mean the centre of the large extent of forest and pleasure-ground, which includes Hyde Park

and Kensington Gardens?—It would be where Rotten-row now turns off into the drive.

10257. Mr. *Ewart.*] How would you cross the Serpentine bridge?—That would be more the other way, I think.

10258. Lord *Seymour.*] Have you considered the subject of this road much?—Not much.

10259. *Chairman.*] Is it not the general opinion of those persons who have given their attention to the subject, that the inhabitants of that large city which has sprung up in Tyburnia, if they wanted to get to the great mass of public institutions, supposing them to be collected together on the proposed site, would not be disposed to go round by Cumberland Gate and Hyde Park corner, but would expect some readier access across the park?—Yes; there is only one other access, by Palace gardens.

10260. But that would also make it necessary for them to go a good way round, would it not?—Yes.

10261. Lord *Seymour.*] If there is to be a road made at all from the north to the south side of the park, near Kensington Gardens, have you considered how they are to pass the Serpentine?—No, I have not considered it particularly. I have merely considered the general want of a road, if establishments of the kind referred to were removed to the Gore House estate, or its neighbourhood.

10262. If there is to be a ha-ha road, unless it is beyond the Serpentine, the Serpentine would interfere with it, would it not?—It appears to me that the ha-ha road ought to be very near the division of Hyde Park from Kensington Gardens.

10263. You are aware, are you not, that the Serpentine is not only in the park, but that it continues into Kensington Gardens?—No, I was not aware of that.

10264. The fact being that the Serpentine not only passes through the park, but continues through a large portion of the gardens, will not the Serpentine be very much in the way of making a ha-ha road between the gardens and the park?—Not altogether. It would be very easy to carry the Serpentine over a sunk road.

10265. Then your ha-ha road would go under the Serpentine by means of a tunnel?—Not by means of a tunnel, properly so called, but by means of a sunk road, the top of which should be covered over with iron plates. I recently carried a large navigation over a railway in the same way.

10266. Are you aware that there is a road right through Kensington Gardens, which would save all that work, if the gates at the two ends were opened?—No; I know very little of Kensington Gardens.

10267. You have spoken of the site at Kensington Gore being intended partly for a school of design?—Yes; that is one of the objects contemplated.

10268. I think you explained that school of design to be rather what you would call a college of design?—Yes.

10269. Not a school to which young students should come for the purpose of elementary study, but a school in which those who were more advanced should complete their education?—Yes. It would be a sort of university, with colleges all over the kingdon.

10270. Therefore, the inconvenience that would arise if young lads were required to go there for daily study would not occur in the case of those who had gone through their elementary studies, and who were only completing them at a more mature period of life?—That would be so.

10271. You have spoken of different societies and institutions that might be collected at this spot?—Yes; as distinct from institutions or buildings for industrial purposes.

10272. You are aware of the societies and institutions that were pointed out in the Second Report of the Commissioners?—Yes.

10273. Are you aware whether or not, since that Report was published, of those societies and institutions have objected to go so great distance from London?—Some of them I know have objected to the distance.

10274. But they have all expressed a wish, have they not, to get buildings appropriated for them?—Yes, all of them, I believe, have expressed that wish.

10275. And many of them have expressed a wish, have they not, to be brought near to other institutions?—Yes; they admit the general principle of juxtaposition to be good, as far as I have seen, but they say the distance is too great. My answer to that is, that the distance keeps lessening day by day.

10276. You have stated also, that the Commissioners only propose to find ground, and do not propose to do more, either for a National Gallery, or for these different institutions?—They have no means of doing more.

10277. Do they not propose hereafter to take to themselves the management of some of these institutions?—The industrial institutions.

10278. Then, although they give the ground for other societies and institutions, they would retain, as regards the industrial institutions which would occupy a portion of this space, the control and management of them to a certain extent?—Partly.

10279. Have you considered how much of the 86 acres would be requisite for the purposes of the School of Design and its accompanying buildings?—No. I think the industrial institutions would be built in two or three different parts. We have never made any plans for such buildings, and the party who has most considered the matter is our President himself.

10280. You have been asked about the land being table land, for the purpose of such buildings as it would be proposed to erect upon it;

would there be any advantage in the land being all table land?—No; I should say rather the contrary, because with falling land like this, you may build on one side, and have excellent terrace room on the other. I think that is a great advantage, as it would enable you to make the building much more handsome.

10281. What quantity of frontage have you now, that is actually available?—Six hundred feet next to the Kensington-road.

10282. Without reference to the wedge that has been spoken of, the position of which it is desirable to obtain?—Yes.

10283. If the ground to which you have alluded could be obtained, you would have a frontage of nearly 1,200 feet, would you not?—Yes, between 1,100 and 1,200.

10284. Do you know what the frontage is of the ground on which the present National Gallery is placed?—No, I do not.

10285. Will you take this plan into your hand (*handing it to the Witness*), and tell me from it what is the frontage of the building which is at present occupied partly by the National Gallery, and partly by the Royal Academy?—Four hundred and fifty-five feet.

10286. You have been asked about baths and washhouses; would it, in your opinion, be necessary for the population of the district that baths and washhouses should be put within a few feet of the ground which has been acquired by the Royal Commissioners?—No; the neighbourhood would not require baths and washhouses to be near it at all.

10287. Do you mean that the persons in that neighbourhood requiring baths and washhouses might have them within a convenient distance, without there being contiguous, or closely contiguous, to the site which has now been acquired by the Royal Commissioners?—They might be placed within a convenient distance of the ground itself, and in a more convenient situation for the parties requiring to use them.

10288. Do you think there is any security that no baths and washhouses, or factories of any kind, would be built on ground closely adjoining to that belonging to the Commissioners?—There could be none close to it, for our roads are to be laid out from 80 to 100 feet wide.

10289. The first security is that you have 86 acres already in one plot?—Yes; and another security is, that the adjacent land is so valuable that it could not be appropriated to such purposes at all by the parties owning it.

10290. Are you aware of the distance of the baths and washhouses from the present National Gallery?—No, I am not.

10291. Your first security is that you have 86 acres in one plot?—Yes, which could not be encroached upon.

10292. Next, you are surrounded by roads nearly 100 feet wide?—Yes; there are two roads from north to south, 100 feet wide and 80 feet wide respectively, and a road from east to west 80 feet wide.

10293. And you consider also that you have this further security, that the ground adjoining those roads will rise so much in value, that it will not be appropriated to such purposes as those to which I have alluded?—Yes; besides, nearly half the frontage to those roads belongs to the Commissioners.

10294. Therefore the Commissioners may take care that on that ground nothing objectionable is built?—Yes.

10295. Mr. *Ewart.*] Are there there not several outlying portions of the property which it would be difficult to appropriate to any public purpose, such as corners running into other people's property?—Yes; we propose to deal with that as we best can, either by exchange or otherwise, so as to get perhaps more frontage next the roads.

10296. Mr. *Vernon.*] Supposing it were an object to erect a National Gallery only on this site, what extent of ground have you that would be perfectly free from encroachment or intrusion by other parties?—In the first place, there would be a square piece of ground of ten acres next the Kensington-road.

10297. Having a frontage to the road of 600 feet?—Yes.

10298. You would at present have no security, would you, that there might not be some obnoxious buildings erected on either of the blocks of land to the right and left?—The block of land to the left is Eden Lodge, belonging to Lord Auckland, which we once nearly bought, and had to give up again; his Lordship did not wish to part with it.

10299. And what is there on the other part?—The gardens of the very good houses I have mentioned near the Kensington-road.

10300. You say you propose to have an Act of Parliament to enable you to purchase that?—We have proposed to get an Act of Parliament empowering us to remove that, which would be no injury to the public.

10301. Assuming there to be portions of the ground in this block to the west which are highly prized by their possessors, do you propose to take it from them compulsorily under the power of an Act of Parliament?—Yes, the inferior property.

10302. Upon what principle would you propose to take it from them, if you would not apply the same principle to the land on the other side?—We think we can show a better reason for taking that property at its full value than can be shown for allowing it to remain an interruption and a nuisance.

10303.—Supposing that Act of Parliament not to be obtained, buildings might be erected, might they not, immediately contiguous to your proposed new gallery?—Yes; I admit the possibility of it, although it is not in the slightest degree probable.

10304. Mr. *B. Wall.*] Is there not a floor-cloth manufactory close to Eden Lodge at present?—No, I think not very near.

10305. That has not been part of your purchase?—No.

10306. *Chairman.*] If the National Gallery, although not erected upon this piece of ground, were erected in an eligible situation not far distant in the neighbourhood of the park or Kensington Gardens, or on a portion of either, the object of the Commissioners in having the museum of fine art in the immediate neighbourhood of other institutions would be partially attained, would it not?—Yes, partially; if the Government should determine to erect a National Gallery in Hyde Park, where the roads meet in front of this site, it would require an alteration in the mode of laying out the ground for other purposes.

10307. Do you mean you have a distinct plan as to how the ground is to be laid out?—No; we have no plans.

10308. You say that if anything else were to be done with the National Gallery, it would cause an alteration in the mode of dealing with the ground?—Yes; an alteration would naturally follow.

10309. If the National Gallery were to be built so near to this site as to be easily accessible, and almost as near as it might be under any circumstances, would not the object of the Commissioners be partially attained?—Yes; if that should be determined upon by the Government, who have an equal voice with the Commissioners.

10310. Mr. *M. Milnes.*] Was there any suggestion or offer made to the Royal Commission to purchase any other property?—No, we never had any land offered to us; people never knew what we wanted; and what we wanted we endeavoured to obtain as quietly as we could.

APPENDIX K.

Treasury Minute, dated 27 March 1855, reconstituting the Establishment of the National Gallery.

My Lords have before them the Report of the Select Committee of the House of Commons on the National Gallery, dated 4th August 1853.

This Committee was appointed "To inquire into the management of the National Gallery; also to consider in what mode the collective monuments of antiquity and fine art possessed by the nation may be most securely preserved, judiciously augmented, and advantageously exhibited to the public."

The principal recommendations of the Committee, so far as regards the future management of the Gallery, are the following:

1. A Board of Trustees to be continued.
2. No person to be a Trustee *ex officio.*
3. The Trustees to be appointed by the Treasury.
4. The number of Trustees to be diminished as vacancies occur.
5. The office of Keeper to be abolished.

6. A salaried Director to be appointed.
7. Recommendations for purchases of pictures to be made by the Director in writing to the Trustees.
8. A fixed sum to be annually voted in the Estimates, and placed at the disposal of the Trustees for the purchase of pictures.

As these recommendations, combined with other suggestions in the Report, render necessary an entire revision of the system under which the National Gallery has been managed up to this time, and as the Board of Treasury has always been the controlling power and principal authority over this institution, it appears desirable, before my Lords proceed to lay down the rules and regulations under which the management of the gallery shall for the future be conducted, that they should briefly recapitulate the official documents which have emanated from this Board in reference to the gallery.

In the year 1823 the collection of pictures of the late Mr. Angerstein was negotiated for by the Treasury, and a vote was taken in the year 1824 for the purchase of them for the sum of 60,000*l.*

On 23rd March 1824, the Board of Treasury, by Minute, appointed a Keeper of the gallery, whose functions were defined as follows:

"To have charge of the collection; to attend to the care and preservation of the pictures; to superintend the arrangements for admission; to be present occasionally in the gallery; and to value and negotiate (if called upon) the purchase of any pictures that may in future be added to the collection, and to perform such other services as he may from time to time be called upon to do, by instructions from the Treasury."

On 2nd July 1824, a Treasury Minute nominated a Committee of six gentlemen "to undertake the superintendence of the National Gallery of Pictures, and to give such directions as may be necessary from time to time, for the proper conservation of them, to the Keeper, who will be instructed to conform to their orders."

The Keeper was informed accordingly, and was instructed "in future to submit to the Committee above-mentioned his requisitions for advances of money to defray the expenses of the establishment, and forward them to the Treasury, under their sanction."

On 31st March 1824 an Assistant Keeper and Secretary was appointed by the Treasury. He was instructed "to attend to the gallery on public days; to act as Secretary; and to superintend, under the Keeper, the arrangements for the admission of the public, and of the artists who study in the gallery," &c.

The Committee of gentlemen nominated by the Treasury Minute of July 1824 has, under the name of "Trustees," continued to the present time as the superintending body over the gallery, vacancies by death or otherwise being filled up on the nomination of the First Lord of the Treasury for the time being; but questions of money for the purchase of

pictures, &c., being always referred to the Chancellor of the Exchequer for the time being, the decision of the Treasury was final; the First Lord of the Treasury and the Chancellor of the Exchequer being moreover *ex officio* Trustees of the gallery.

The practice, as regards "purchases of pictures," has been for the Treasury to advance, from Civil Contingencies, the sums necessary, and to provide, in the Estimates for the National Gallery for the year following such purchase, the sums necessary for repaying to Civil Contingencies the amount so advanced.

The evidence given before the Select Committee distinctly proves that the system above described has not conduced to the welfare of the institution; the instructions from the Treasury were not sufficiently specific, and, as the Trustees themselves did not frame any rules, neither Trustees nor Officers seem to have known precisely what were their proper functions, or how to act on emergencies or difficulties; and as regards the purchase of pictures, the Chancellor of the Exchequer has often been influenced, in withholding pecuniary assistance, by the state of the finances of the country, irrespective of the advantageous opportunities from time to time afforded for adding to the national collection.

The National Gallery has much increased in size and importance since its commencement in 1823, and it will be the object of my Lords, in the arrangements they now proceed to make, in conformity with the recommendations of the Parliamentary Committee, not only to meet the existing requirements of the gallery, but to promote the development of the institution and make it more worthy of the country and the advanced position of art. In approaching this task, my Lords understand that the great essential principle aimed at by that Committee was to secure, in the management of the National Gallery, the advantage of the full and undivided responsibility of an officer highly qualified and liberally remunerated; and that while it was contemplated such officer should have the aid and assistance of unpaid Trustees, yet that the relative position of the Director and Trustees should be such as should in no way weaken the responsibility of the former. With these views my Lords proceed to state what appear to them the best regulations for the future.

Board of Management.—Trustees and Director.

My Lords are not prepared to abolish entirely the system under which the Gallery is superintended by a Board of Trustees, but they will clearly define the amount of responsibility respectively attaching to the Trustees as a body, and to the salaried "Director," whom they propose to associate with the Trustees, and on whom must be fixed the final responsibility in cases in which any difference of opinion may arise.

Their Lordships are of opinion that the continuance of Trustees is desirable, not for the purpose of sharing, except in a very limited and defined form, the responsibility of the Director, but in order to keep up a connexion between the cultivated lovers of art and the institution, to give their weight and aid, as public men, on many questions in art of a public nature that may arise, and to form an indirect though useful channel of communication between the Government of the day and the institution.

Without this aid the Director would be in a high but insulated position, reporting periodically to the Treasury, but missing the counsel and experience of the Trustees, and being without that stimulus to exertion which the knowledge of the bond of union existing between the lovers of art in this country and himself, through the medium of the Trustees, would be calculated to afford.

My Lords propose, therefore, to continue the present Board of Trustees (with the exception of the members *ex officio*), if the noblemen and gentlemen composing it will continue to act.

But they are of opinion that it will not be desirable that the vacancies occurring shall be filled up until the present number shall be reduced to four, and that thereafter it shall not at any time exceed six; vacancies as they occur being filled up by the First Lord of the Treasury; no person being appointed or acting in virtue of any office he may hold.

My Lords propose to appoint a Director of the National Gallery, with a salary of 1,000*l.* per annum, such appointment to be for a term of five years, but the Director to be eligible for re-appointment, which appointment, however, may be at any time revoked by the Treasury.

My Lords consider it a fortunate circumstance that they are able to select for the first appointment to this important office, a gentleman of such high attainments as Sir C. Eastlake, who is President of the Royal Academy, and has shown qualifications of the highest order for the office.

The Trustees and the Director being thus appointed, my Lords proceed to define the duties and the limit of responsibility attaching to each, before they proceed to fix the remainder of the establishment of the institution and the system of accounts and payments.

The Trustees will hold meetings at the Gallery in Trafalgar Square on the first Monday in every month during the Session of Parliament, (and at such times, when Parliament is not sitting, as the Director may consider necessary), being duly summoned by the Secretary.

No quorum of Trustees will be necessary to legalise proceedings.

The Director will attend all the meetings, unless prevented by illness or other unavoidable cause; the Secretary will also attend.

The Trustees will have before them the minutes of proceedings, the Director's report or statement respecting offers of pictures for sale, and

respecting bequests and donations, together with all other reports and communications, special or ordinary, relating to the establishment, which, in the opinion of the Directors should be submitted to the Trustees.

In the event of the Director proposing the purchase of any picture, the Trustees may either sanction such purchase on the grounds submitted, or if they object to sanction it, and the Director should still propose to act on his own opinion, they may cause their dissent, together with their reasons, to be entered in the minutes, and the whole proceedings shall be submitted to Parliament along with the Annual Report on the Gallery, which will in future accompany the Estimate.

In cases admitting of no delay, where the Director may have completed a purchase before a meeting of the Board could be called, the approval or disapproval of the Trustees on receiving the report will be recorded as above.

As offers of pictures may be sometimes made to the Trustees directly, and as the Trustees might occasionally be disposed to take the initiative in suggesting the purchase of pictures, such proposals or suggestions may be made by them after the Director's report has been disposed of. The decision of the Director on such proposals, after due inquiry, would be final; but the Trustees will have the power of recording a protest in the minutes, as above.

The Trustees may also make any suggestions they desire respecting the management of the establishment or of the Gallery; but on all such suggestions, the decision of the Director will be final; the Trustees, if they wish it, having the suggestions and the decision recorded in the minutes.

The appointments of attendants and of all the officers rests with this Board; and all recommendations to the Treasury should be made on the responsibility of the Director.

Two of the Trustees will attest by their signatures the correctness of the general report of the Director respecting the state of the pictures in the gallery, such report being a statement of facts only, irrespective of any recommendations based thereupon.

The Trustees, or any one of them, will communicate from time to time with Her Majesty's Government officially on the affairs of the National Gallery when they think fit, and lend to the Director their assistance, co-operation, and advice in any steps to be taken in respect of them.

Subject, therefore, to such regulations and directions as may from time to time be issued by my Lords, the management of the National Gallery, and the care and ordering of such national property as may be deposited therein, will henceforward be vested in Trustees and a Director; and my Lords entertain a strong hope, that although the relation of the Trustees and the Director may appear anomalous, yet that the system will in

practice work harmoniously, and that it will be found, that while on the one hand the responsibility and authority of the Director remain clearly defined and paramount, yet that the publicity to be given to the proceedings at the meetings of the Trustees, when a difference of opinion arises, will have its due influence on the judgment of the Director, and render a resort to the alternative herein provided of the rarest possible occurrence.

THE DIRECTOR'S DUTIES.

The chief duties of the Director, in addition to his functions at the Board of Trustees, will consist in the selection and purchase, or recommendation for purchase, of pictures for the National Gallery, and in the arrangement, description and conservation of the collection.

One of the most important duties of the Director, and one which will require great care and attention, will be to construct a correct history of every picture in the collection, including its repairs, and describing accurately its present condition, which history will be continued from time to time by new entries as occasion may require.

The selection of pictures must, of course, be left in a great measure to the judgment of the Director, aided by the Trustees, but my Lords are of opinion that, as a general rule, preference should be given to fine pictures for sale abroad. As regards the finer works of art in this country, it may be assumed that, although they may change hands, they will not leave our shores, whereas the introduction of fine works from abroad would form a positive addition to the treasures of art in England.

My Lords are also of opinion that, as a general rule, preference should be given to good specimens of the Italian schools, including those of the earlier masters. It must, however, be clearly understood that their Lordships do not intend in any way to fetter the Trustees and Director in their choice, but that they must use their discretion as circumstances arise.

My Lords propose, in accordance with the recommendation of the Committee, to insert annually in the Estimate for the National Gallery a sum expressly for the purchase of pictures. This sum need not be annually expended, but might accumulate, and thus enable the Trustees and Director to purchase a fine collection at once, if such an opportunity should offer.

If cases of sudden emergency should arise, it will be competent for the Director to purchase a picture out of the sum so voted, and as he will do this entirely on his own responsibility, it will be necessary that the reasons for the purchase should be fully stated in writing, and placed on record at the next ensuing meeting of the Trustees.

In the event of the Director recommending a larger purchase than the grant at the disposal of the Treasury can meet, his recommendation, and

the opinion of the Trustees thereon, after being inserted on the minutes, must be forwarded to my Lords for their consideration.

My Lords are of opinion that, for the present, the loan or temporary deposit of pictures in the National Gallery should not be permitted.

If it shall be decided by the Trustees, on the recommendation of the Director, to remove any picture from the collection, either for the purpose of lending it to some provincial collection, or as a permanent measure, a report stating the reasons for this must be made to my Lords, and their sanction obtained.

The Director will prepare and issue, with the sanction of the Trustees, rules and instructions for the guidance of the officers and attendants in their duty, and he will in like manner frame regulations for the admission of students and others to make copies in the galleries, which rules and regulations, with any changes made from time to time, must be appended to the general report which the Director is to make annually to the Treasury.

Travelling Agent.

In order to enable the Trustees and Director the more easily to acquire fine pictures that may be offered for sale on the Continent, my Lords propose to appoint "a travelling agent," with a salary of 300*l.* a year, whose duties will be to visit the private collections of distinguished families abroad, ascertaining and describing the contents, and obtaining the earliest information of any intended sale. The agent will be paid his travelling and personal expenses on a scale hereafter to be fixed.

The officer next in rank to the Director will be

The Keeper and Secretary.

The Committee of the House of Commons recommend the abolition of the office of "Keeper," but, as it is essential to the safe custody of the valuable collection and the security of the building that a responsible person should reside at the gallery, my Lords are of opinion that the functions of Secretary to the Director and the Board of Trustees should be performed by an officer who is also well qualified to perform the duties of Keeper, and that thus a joint office of Keeper and Secretary should be created.

The Keeper and Secretary will have a salary of 750*l.* a year. He will reside in the building, occupying the rooms heretofore occupied by the sub-keeper and secretary, with the present Board-room as his office; he will be allowed fuel for the office-room only, and the conditions in regard to taxes payable for the private rooms he occupies will remain unaltered.

This officer will have a most important duty to perform, which will impose upon him, for years to come, great labour and much research. In a Paper on the future management of the National Gallery, published in

the Appendix to the Report of the Committee, at page 788, are the following remarks:—

The idea of a catalogue of the Masters who might sooner or later be represented in a National Gallery, has occurred to many; but the actual formation of such a list has only been recently undertaken according to a plan suggested by His Royal Highness Prince Albert, and for His Royal Highness's use. With reference to that list, I may add, that the Catalogue of the Italian Masters was prepared by myself, and that relating to the other schools by Mr. Wornum. The series cannot be considered complete; there are probably both omissions and redundancies; but it may at least be taken as the groundwork for such a guide.

I proceed to consider the question of efficient superintendence—an object to be best accomplished, I think, on two principles—a division of labour, and individual responsibility. The qualifications for connoisseurship are various, and are rarely united in one and the same person. The connoisseur should first possess the artist's knowledge with regard to pictorial merit in an absolute sense, independently of names of Masters and historical associations. He should in the next place, be thoroughly acquainted with the history of Schools, and the practice, including the changes of style, of individual painters. He should possess an extensive knowledge of the principal works of the Masters, and of the vicissitudes of those works, in regard to change of place, possessors, and price. The connoisseur should further be acquainted with the works of the imitators of such Masters; he should be aware of the number of repetitions of a given Master's productions, with more or less assistance from scholars, and should ascertain which is the best of those repetitions.

This acquaintance with the examples of painting is generally acquired—more or less accurately, and never completely—by long experience only, and certainly cannot be acquired without experience; but it has always to be learnt afresh by every new student, with very little assistance from the labours of previous investigators. In order to amass and preserve an important part at least of the knowledge necessary for these objects, it would be desirable to form, by degrees, catalogues of the works of all the more distinguished Masters; on the principle of Passavant's Catalogue of the Works of Raphael (the most satisfactory both in plan and execution of any list of the kind). Other works having the same object would be of assistance; such as Orsini's Enumeration of the Works of Pietro Perugino; Rigollot's Catalogue of those of Leonardo da Vinci; the Catalogues of Waagen, Michiels, and others, of the Works of Van Eyck; Ticozzi's Description of those of Titian; Pungileoni's List of Correggio's Works; Stirling's Catalogues of the Works of Velasquez and Murillo; and, last not least, Smith's Catalogue Raisonné.

A labour of this description would be best undertaken by a Secretary, who might receive, in addition to his salary, an occasional allowance for travelling, with a view to rectify and enlarge his catalogues, and to collect information respecting pictures for sale. Such a secretary should be freed from the ordinary duties of keeping minutes of proceedings and conducting unimportant correspondence, although he should be fully cognisant of all such transactions, and might, in especial cases, undertake such duties himself; an assistant-secretary would, however, be indispensable.

A tabular form, like the following, might be adopted for the catalogues. Should the observations be too copious to be so inserted (as might often happen in the case of "Remarks"), a reference might be made to one of the volumes intended to contain such fuller notices; among those more circumstantial memoranda there should be references to all writers of authority who describe the picture or trace its history. In such notes, also, the state of the picture, at a given time should, as far as description can answer the purpose, be recorded; and if the work has not been engraved, a description of the composition should be given, and should be referred to under the head "Subject." The known prices of pictures, whether disposed of at sales or by private contract, should, in like manner, be recorded. Lost pictures should also be noticed, with references to the authors who describe them; thus, several Giorgiones, enumerated by Ridolfi and others, are at present unknown, but may not impossibly yet come to light. Lastly, destroyed pictures; such as those of Titian and others, destroyed by fire in the Ducal Palace at Venice, in 1576, should be described; as original sketches, or even copies of such works, would possess a more than ordinary interest.

Name of Master (for example) PIETRO PERUGINO.

1. *Number.**—1–15. An Altar Piece, originally in the Church of S. Pietro Maggiore, at Perugia, ornamented with a lunette above, and with smaller pictures in the predella and pilasters. Two circular pictures over the adjoining doors of the choir formed part of the decoration. The predella contained five pictures, the pilasters six; making, with the lunette, the two circular pictures, and the altar-piece itself, 15 pictures.

2. *Subject*—.Subject of the altar-piece, the Ascension. The lunette contained a representation of the Almighty with two Angels. The subjects of the three centre pictures of the predella were the Adoration of the Kings, the Baptism, and the Resurrection; the remaining two were half figures of S. Costanzo and S. Ercolano. The pilasters were adorned with half figures of the following saints: S. Benedetto, S. Scolastica, S. Mauro, S. Placido, S. Flavia, and S. Pietro Abate, founder, and first abbot of the convent. The two circular pictures contained figures of David and Isaiah.

3. *Size.*—Altar-piece, 10 feet 9¾ inches high, 8 feet 9½ inches wide. The three subjects of the predella, each 1 foot 3¼ inches high, 2 feet 2½ inches wide. The half figures of saints, 11¾ inches high, 10¼ inches wide. Measures of the others unknown.

4. *On what Material painted.*—All originally on wood. The altar-piece is now transferred to cloth, as are also the three half figures of saints in the Vatican Gallery.

5. *In what Method.*—Oil.

6. *Inscription and Date; Peculiar Marks.*—

7. *In what Place, Gallery, or Collection.*—The altar-piece is in the Public Gallery at Lyons. The three predella pictures, from the New Testament, are

* Each work should be numbered for the sake of easy reference. Pictures might be enumerated as the historical materials come to hand; a chronological order is unnecessary in such notes, although it might be attended to in a catalogue formed from them. In cases like the present, where an altar decoration consisted of several pictures, the number of works should be specified.

in the Public Gallery at Rouen, where they are incorrectly attributed to Raphael. Three half figures of saints, S. Benedetto, S. Placido, and S. Flavia, are in the Gallery of the Vatican. The other five half figures of saints returned to Perugia, and are in the sacristy of S. Pietro Maggiore. Where the other three pictures now are, the lunette and the two circular pictures of Prophets, is unknown.

8. *Repetitions, where.*—An inferior repetition of the principal subject, the Ascension, altered only in some colours of the draperies, is in the Duomo of Borgo S. Sepolchro.

9, *Copies, where.*—Copies, in water colour, of the two round pictures of Prophets, are in the sacristy of S. Pietro Maggiore, at Perugia. The same figures were also copied by Raphael when young, in his sketch-book preserved in the Venetian Academy.

10. *Engravings.*—

11. *Original Drawings and Studies for the Work, where.*—

12. *General History. Remarks.* — Painted 1495, for S. Pietro Maggiore, in Perugia. Removed from the high altar to a chapel in the same church in 1751. When in the chapel (if not before), the pictures of the predella and pilasters were protected with glass ; what became of the lunette and the two circular pictures is unknown; the rest were taken to Paris during the French occupation of Italy, in 1797. The Altar Piece was ultimately, in 1815, presented to Lyons by Pope Pius VII., when the smaller pictures, with the exception of the three at Rouen, returned to Italy. *See* also vol. , p.

The great and useful work thus detailed will be compiled by the Keeper and Secretary, under the supervision of the Director. The other duties of the Keeper and Secretary will be to attend the meetings of the Board, to draw up and prepare the minutes, and to conduct all the necessary official correspondence.

Any recommendations relating to the establishment, made by the Secretary to the Board, must be approved by the Director before they are so submitted.

He will receive his instructions from the Director, and must implicitly follow them in every respect as regards the arrangements, both in Trafalgar Square and Marlborough House.

He will prepare proper pay-lists for the Paymaster-general, and will transmit to the Commissioners of Audit monthly statements and a yearly account, properly vouched.

The admission of artists and others, to copy pictures, will be superintended by the Keeper, under the regulations to be issued by the Director.

The compilation and continuation of the Historical Catalogues of the pictures forming the National Gallery in Trafalgar Square and Marlborough House (which are sold to the public) will be undertaken by the Keeper in his capacity of Secretary, as a part of his ordinary duties, subject to the revision and approval of the Director.

* * * * * * * * *

Write to each of the following noblemen and gentlemen (the present Trustees of the National Gallery),

The Earl of Ripon,	Lord Monteagle,
The Earl of Aberdeen,	Sir James Graham,
Marquis of Lansdowne,	Lord Overstone,
Samuel Rogers, Esq.,	Lord Ashburton,
The Duke of Sutherland,	William Russell, Esq.,
The Earl of Ellesmere,	Thomas Baring, Esq.,

Transmitting to each a copy of this Minute, and acquaint them respectively that it will give my Lords the greatest satisfaction if they will permit this Board to continue them as Trustees of the National Gallery under the new system established by this Minute.

Add, that it has been the object of my Lords to carry out to the best of their power the views and recommendations of the Committee of the House of Commons, and their Lordships feel convinced that, if the existing Trustees will continue to exhibit the same lively interest for the good of the Gallery for which they have been so long conspicuous, the most favourable results for the future may be anticipated.

* * * * * * * *

Let warrants be prepared for the signature of my Lords, appointing

Sir C. Lock Eastlake - - - Director.
Mr. Wornum - - - - - Keeper and Secretary.
Mr. Otto Mündler - - - - Travelling Agent.

APPENDIX L.

CORRESPONDENCE between the SOCIETY OF ARTS and HER MAJESTY'S COMMISSIONERS on the subject of the TRADE MUSEUM (Animal Produce Department).

1.—SOCIETY OF ARTS TO HER MAJESTY'S COMMISSIONERS.

Society of Arts, Adelphi, London,
16th July 1855.

SIR,

I am directed by the Council to forward to you, for the information of the Royal Commissioners of the Exhibition of 1851, the following extract from the minutes of Council held on Wednesday last.

Extract.

"The Secretary reported that he had received the following letter from Sir Joseph Paxton:—

"'Rock Hill, Sydenham,
6th July, 1855.

"'DEAR SIR,

"'I am called away to Paris for a few days, and as it is possible that in my absence some inquiries may be made of you relative to my

proposal at the dinner on Tuesday last, I think it well to write and explain for your information what my proposal included.

"'On the part of the Crystal Palace Company, I should propose to give your Society ample space and every requisite facility for the exhibition of a Trade Museum at the Crystal Palace, to give free admission to the Council and Officers of the Society, and as the museum might be placed in connection with our Raw Produce Department, to pay half the salary of a caretaker who might attend to both.

"'Our Directors are all absent, and I write this on my own responsibility, but with the conviction that they will confirm the offer made by me.

"'I believe also, that should there be any difficulty in consequence of the expense to which the Society of Arts may have been put in connection with the museum, the Crystal Palace Directors would not be indisposed to assist in providing for it.

"'I am, &c.

(Signed) "'JOSEPH PAXTON.'

"Resolved,—That the Royal Commission, having a joint interest with the Society in the property of the Trade Museum, be informed of the offer with reference to it made by Sir Joseph Paxton, and asked whether the Royal Commission have any wish or opinion to express on the subject."

"Resolved,—That a Committee be appointed to take into consideration the communications which have passed between the Council and the Royal Commissioners and other parties relative to the disposal of the Trade Museum, and to report to the Council thereon."

"That the following gentlemen form the Committee:—Lord Ebrington, Mr. Macdonald, Mr. Redgrave. The Chairman and Deputy Chairman to be summoned."

I have, &c.

P. LE NEVE FOSTER.

Edgar Bowring, Esq. *Secretary.*

2.—SOCIETY of ARTS to HER MAJESTY'S COMMISSIONERS.

Society for the Encouragement
of Arts, Manufactures, and Commerce,
Adelphi, London, 19th July 1855.

SIR,

I AM directed by the Council to hand you on the other side a copy of a report of the Committee appointed to take into consideration the communications which have passed between the Council and the Royal Commissioners for the Exhibition of 1851, and other parties relative to the disposal of the Trade Museum, and I am to inform you that the report has been received and unanimously confirmed by the Council.

I am further to request that you will be good enough to bring the matter before the Royal Commissioners.

I am, &c.

P. LE NEVE FOSTER, Secretary.

Edgar Bowring, Esq.

COPY of the Report referred to in the foregoing Letter.

"The Committee have considered the correspondence between the Council and the Royal Commissioners and the circumstances connected with the formation of the collection, and also the letter of Sir Joseph Paxton, and have resolved:

"That it be recommended to the Council that the Secretary write to the Royal Commissioners, and inform them that the Council are prepared at once to transfer the collection to the Royal Commissioners, and will willingly assist in every way in their power to promote the views of the Royal Commissioners, if after consideration of all the circumstances they will,

1st. Reimburse the Society merely the sum it will have expended in reference to the collection.

2nd. Provide a place for its immediate reception and arrangement with a view to exhibition and its continuance as a permanent and advancing collection."

"But if the Royal Commissioners are unable to carry out this arrangement, then that the Council will, with their sanction, be prepared to make such provision as will ensure those permanent advantages which so important and novel a collection must confer on the public generally, and especially upon the manufacturing interests of the Country.

"The Committee hold it their duty to recommend to the Royal Commissioners the claims of Professor Solly, who has, with great zeal, intelligence, and industry, brought the Trade Museum to its present very satisfactory position.

3.—HER MAJESTY'S COMMISSIONERS to the SOCIETY of ARTS.

SIR, Whitehall, August 4, 1855.

I AM directed by Her Majesty's Commissioners for the Exhibition of 1851 to acknowledge the receipt of your letters of the 16th and 19th ult., on the subject of the Trade Museum (Animal Produce Department) which has been formed under the joint authority and at the joint expense of the Society of Arts and the Commissioners, and which is now being exhibited at the Society's rooms.

With respect to the former of those letters, in which you transmit for the consideration of Her Majesty's Commissioners, on behalf of the Council of the Society, an extract from their minutes respecting a

proposal that has been made by Sir Joseph Paxton on the part of the Crystal Palace Company, to receive and exhibit the Museum in question at the Crystal Palace on the conditions specified by him, I am to acquaint you, for the information of the Council, that the Commissioners are not prepared to become parties to the acceptance of Sir Joseph Paxton's proposal.

With regard to the proposition submitted by the Committee appointed to consider the question of the Trade Museum, and adopted by the Council of the Society, for the transfer of the whole Museum to Her Majesty's Commissioners on the conditions mentioned in the enclosure to your letter of the 19th ultimo, I am directed to state that the Commissioners are prepared to accept the transfer of the collection, and to provide a place for its reception and arrangement, with a view to exhibition and its continuance as a permanent and advancing collection, as specified in the second of the conditions in question. With reference to this subject, I am to enclose a copy of a paper that has just been laid before Parliament containing a letter addressed by Her Majesty's Commissioners to Her Majesty's Government, urging the importance of immediate steps being taken to furnish, in the manner therein pointed out, proper accommodation for the exhibition of various collections of national interest for the due display of which no means at present exist.

Estimates for Civil Service, 1855 (No. 8).

The Council, who will be aware that the vote necessary for the purpose has just received the sanction of the House of Commons, will observe that this letter contains an especial reference to the case of the Museum now under consideration.

Her Majesty's Commissioners, in announcing their acceptance of the offer of the Society and the admission by them of the principle involved in the first of the conditions set forth in the Committee's Report, viz., that the Society should receive some reimbursement for the outlay it has incurred in connection with the formation of the Museum, would, however, observe to the Council that they had not been led to suppose from anything that has passed between themselves and the Society, on the subject of the Museum,—either on the occasion of the recent interview between themselves and a deputation from the Council,—or in previous correspondence,—that the Society looked forward to being repaid the outlay it voluntarily undertook to incur for the promotion of a national object, so intimately connected with the immediate purposes for which the Society was founded, and as there is no expectation that any amount to be paid under this head will be advanced by the Government for the purpose, but must be defrayed out of the limited funds at the disposal of the Commissioners, they will be glad to be favoured by the Council, with a statement of the sum which, under these circumstances, they may consider it right to receive on behalf of the Society in consideration of the proposed transfer of the collection.

It affords Her Majesty's Commissioners much pleasure to express their entire concurrence in the remarks made in the Report of the Committee on the subject of the valuable nature of the services rendered by Professor Solly in bringing the Museum to its present satisfactory position, and their appreciation of the zeal and ability displayed by him, and of his qualifications for assisting in the further development of the collection. At the same time it appears to them that the question raised in the Report in connection with that gentleman's services is one which scarcely admits of a definite decision at the present moment, but must be reserved for ulterior consideration.

I have, &c.

EDGAR A. BOWRING.

4.—SOCIETY of ARTS to HER MAJESTY'S COMMISSIONERS.

Society for the Encouragement
of Arts, Manufactures, and Commerce,
SIR, Adelphi, London, 17th October 1855.

YOUR letter of the 4th August last relative to the transfer of the Trade Museum now in the possession of this Society, to the Royal Commissioners, has been laid before the Council, and in reply I am directed to transmit a copy of certain resolutions which have been passed, the effect of which is formally to transfer to the Royal Commissioners the Trade Museum, as now exhibited, together with those specimens of animal, vegetable, and mineral produce which belong to the Society.

The Council, in thus relinquishing the charge of a collection the formation of which they originated, in whose progress they have always taken a deep interest, and whose present advanced state in so short a time has more than realized their utmost expectations, believe it their duty to record their matured views as to the principles on which a Trade Museum worthy of the vast trade and enormous commerce of this country and its colonies ought to be developed.

The Council believe, that to form a Museum of animal produce alone would be of comparatively little use. A Trade Museum ought to contain animal, mineral, and vegetable products, specially classified with a view to their commercial uses and technical instruction. It would in no way accomplish this object were other Museums of vegetable and mineral produce, already in existence, to be brought into juxta-position with the animal collection. The three collections thus combined would not constitute a Trade Museum; the principles of arrangement, and the classification of a collection of minerals, for example, in a Museum designed for educational or scientific purposes, are quite different from those under which the same collection would be distributed in a Trade

Museum designed for commercial reference, technical teaching, and the requirements of trade.

There are some portions of your letter to which I am instructed to reply, not because the Council admit their justice, but from an anxious desire on their part to stand well with the Royal Commissioners.

It will be to them a cause of deep regret should their deputation to the Royal Commissioners be found to have in any respect gone beyond their strictly defined instructions, so as to bind either directly or by implication the free action of the Council. The deputation of the Council, as they are informed, stated distinctly at their interview with the Royal Commissioners that their instructions were to learn, with as much accuracy as might be, the precise views of the Royal Commissioners with respect to the future disposal of their joint property and to report the same to the Council.

In this report (of which I annex a copy) their instructions would seem to have been rigidly adhered to.

It is quite true, as stated in your letter, that nothing has been said in the various communications which have passed between the Royal Commissioners and this Society on the subject of compensation. The question would have been premature for discussion so long as it continued undecided to whom the ownership of the Trade Museum should ultimately belong. Indeed I am warranted in saying that several members of our Council anticipated, at the time the arrangement was entered into, that the Trade Museum would be left under the control of the Council, and exhibited on premises to be appropriated to the use of the Society of Arts, at Kensington Gore.

In asking the Royal Commissioners to reimburse the Society the money actually expended by the Council on the Trade Museum they would observe, that the Society of Arts, although founded upwards of a century ago, possesses neither endowments nor real property of any kind; that although it has expended since its institution upwards of 200,000*l.* in the promotion of national objects and in the development of the arts, manufactures, and commerce of the country and of the colonies, it has never yet received the grant of one shilling of the public money, and that its whole income is derived from the annual subscriptions of its members and of the 400 Institutions associated with it.

In illustration of these statements they would call attention to the fact, that although the Great Exhibition of 1851 was mainly due to the President and Council of this Society, and they undertook all the risk of so vast and doubtful an experiment, yet they cheerfully relinquished their claim to those profits which they might have insisted on under the original contract deeds, and that although the "Surplus Fund," after paying all expenses and satisfying claims of every kind, was, notwithstanding, very large, yet no portion whatever of that fund was appro-

priated for the Society of Arts, even though the justice of their claim was formally recognised by the Royal Commissioners.

Again, with respect to the Educational Exhibition of last year, although it taxed the energies of the Council to the utmost, and cost 1400*l.* besides (of which 400*l.* remains a permanent charge on the funds of the society), yet it was transferred by the Council to Her Majesty's Government without any claim for compensation, on the sole condition that it should be forthwith exhibited to the public, a pledge which the Government have not found themselves in a position hitherto to redeem.

The Council, however, rejoice to learn that this state of things is no longer to continue, for the exhibition and development of the Educational Collection made by the Society of Arts is put forward as the very first ground on which the Royal Commissioners sought and obtained a grant of public money.

Under these circumstances it is hoped that the Royal Commissioners will realize the exact position of the Council, dealing as they have to do with the small contributions of a large number of persons and institutions, and believe that they have the strongest desire still to be permitted to afford such aid as may be in their power to uphold and promote those important national objects for the development of which the Royal Commissioners have been constituted the legitimate organ.

I am further instructed to state, that the Council learn with much satisfaction the correct appreciation the Royal Commissioners have formed of the energy, ability, and knowledge of Professor Solly. They did not, however, expect to receive a formal pledge of his future appointment. They are satisfied that his own merits will weigh more with the Royal Commissioners than even the Council's recommendation.

I have, &c.

P. Le Neve Foster,

Secretary.

Enclosure (1.) in the above Letter.

Resolutions passed by the Council of the Society of Arts.

Resolved, That it appears by the books of the Society that the sum of 929*l.* 5*s.* 9*d.* has been expended in actual advances solely on behalf of the Trade Museum, exclusive of the expenses due to the use of apartments, coals, gas, stationery, the services of the officers of the Society, and the attendance of its servants.

Resolved, That, the Royal Commissioners having under the arrangement originally entered into, already paid 400*l.* towards the formation of this Museum, on their undertaking to pay to the Treasurers of this Society the sum of 529*l.* 5*s.* 9*d.*, being the balance of the foregoing sum 929*l.* 5*s.* 9*d*, the property of the Society of Arts in the Trade Museum be made over to the Royal Commissioners, (excepting only such articles

as belong to Professor Solly,) and that the Council do present to them, as a gift, those specimens of animal, vegetable, and mineral produce which exclusively belong to the Society.

(Signed) P. LE NEVE FOSTER, Secretary.

ENCLOSURE (2.) in the above Letter.

Minute of what took place at the conferrence between the Royal Commissioners for the Exhibition of 1851, and a deputation from the Council, on Saturday 30th June 1855, relative to the Trade Museum Collection.

Viscount Ebrington reported that a deputation, consisting of himself, Dr. Booth, Mr. Redgrave, and Mr. Saunders, had waited upon the Royal Commissioners for the Exhibition of 1851, on Saturday 30th June, to confer with that body relative to the Trade Museum Collection.

His Royal Highness Prince Albert, as President of the Commission, informed the Deputation that the Commissioners were fully impressed with the importance of the collection being at once placed in a situation suitable for its completion and display, and that for this purpose they had determined forthwith to erect suitable temporary buildings on the Commissioners' estate at Kensington Gore in which this collection with other collections might be placed until the permanent building intended to be erected there should be ready for their reception.

His Royal Highness further informed the Deputation that it would be desirable that the Council of the Society of Arts should place the Commission in possession of their views relative to the ultimate disposal of the collection, and requested to know how much longer the Council could keep the collection displayed as at present.

It was replied that the Council could not without very considerable inconvenience set apart its rooms for the display of the collection longer than two months from the present time, and that under any circumstances the collection could not be shown at all in the Society's rooms for longer than three months, as the rooms, at present very inadequate for the exhibition, would be required for other purposes.

Viscount Ebrington said, that the members of the Council present were a deputation only and could not pledge the Council.

The Deputation undertook to report to the Council the information afforded by the Commission, and to communicate at an early period the views of the Council relative to the proposition of the Royal Commissioners.

5.—HER MAJESTY'S COMMISSIONERS to the SOCIETY of ARTS.

SIR, Whitehall, October 25, 1855.

I AM directed by Her Majesty's Commissioners for the Exhibition of 1851 to acknowledge the receipt of your letter of the 17th instant,

submitting for the information of the Commissioners a copy of Resolutions passed by the Council of the Society of Arts to the effect that they are prepared to transfer to the Commissioners, for the sum of 529*l.* 5*s.* 9*d.*. their share of the Trade Museum recently exhibited in the rooms of the Society.

Her Majesty's Commissioners observe that the above amount represents the total sum that has been expended by the Society in connection with the formation of the museum in question ; but as they have already, in their letter of the 4th August last, expressed their admission of the principle that the Society should receive from them, in consideration of the transfer of the collection, some reimbursement for the outlay it has incurred in connection with the formation of the museum, and as they left it to the Council to state the amount which under the circumstances detailed in that letter they would consider it right to receive as such reimbursement, it only remains for the Commissioners to state their acceptance of the terms set forth in your communication, and their readiness to pay the full amount of 529*l.* 5*s.* 9*d.* claimed by the Society, which sum they have accordingly instructed their financial officer to pay to you on the transfer to them of the collection, and its removal to its destination in the new museum building.

Her Majesty's Commissioners direct me to convey to the Council their thanks for the valuable suggestions offered by them as to the principles upon which the development of a Trade Museum worthy of this country should be made to depend.

In thus assuming the sole charge of this collection, the Royal Commissioners cannot omit this opportunity of again testifying to the high sense entertained by them of the cordial co-operation which they have at all times experienced from the Society, whether in connection with the objects of the Great Exhibition for which the Commission was originally appointed, or, as respects the development of the more extensive scheme originating with the existence of the Surplus Fund, for the execution of which they subsequently received powers from the Crown. Of this scheme the establishment of a permanent and increasing Trade Museum forms an important part ; and from their experience of the efficacious assistance which they have already received from the Society of Arts in connection with its formation, Her Majesty's Commissioners will gladly avail themselves of the offer of the Council expressed in your letter, to continue to afford such aid as may be in their power towards the promotion of the national objects which they have in view.

I have, &c.

EDGAR A. BOWRING.

APPENDIX M.

MEMORANDUM by CAPTAIN (now MAJOR) OWEN, R.E., upon the PROPOSED MUSEUM of MANUFACTURES at KENSINGTON GORE.

No definite form having yet been given to the proposal made at p. 30 of the Second Report of Her Majesty's Commissioners for the establishment of a Museum of Manufactures at Kensington Gore, I trust it may not be considered inappropriate if, as one of their officers, I submit my views upon this important subject for their consideration.

The Commissioners have proposed to find the means of concentrating in one spot all the Institutions in the Metropolis supported for the promotion of Science and Art, of giving to the whole an educational character, and thus of inducing a higher tone of feeling and intellectual apprehension in the pursuits which engross the attention of a nation already pre-eminent for its enterprise and industry. The proposal embraces the removal of the National Gallery; of a portion of the British Museum; of the Museum of Economic Geology in Jermyn Street; of that in the Gardens at Kew; of the New Collection of Ornamental Manufactures at Marlborough House; and in addition, as far as it may suit the convenience of the Members, it is proposed to give all the Learned Societies of London facilities for establishing themselves on the same spot, with their respective Museums and Collections.

It is further proposed, by a fusion of the Museum of the Society of Arts with the Collection presented to Her Majesty's Commissioners by the Exhibitors, to form the nucleus of the "Museum of Manufactures," which is now under consideration. In attempting to give a sketch of what such a Museum should be, it is desirable to ascertain more plainly the void which it is required to fill among existing Collections. There are already—

1. The British Museum, which in addition to Collections purely scientific, is in a great degree a Museum of Manufactures of past ages and of all countries.

2. The Museum of Economic Geology, besides being a purely Geological Collection, has become a Museum of Manufactures, only limited by the condition of the original material having been of the Mineral Kingdom, and comprises Damascus sword-blades, Etruscan vases, and even the water-wheels used in some of the processes.

3. The Museum at Kew extends to calico and straw bonnets, and might without impropriety be called a Museum of Botanical Manufactures.

4. The produce of the Animal Kingdom applicable to Manufactures has been hitherto unrepresented in any Collection; but the Society of Arts has lately undertaken the task with the assistance of Her Majesty's Commissioners. There is no doubt that Professor Solly, in whose hands the formation of this Collection has been placed, will find it necessary to introduce into it illustrations of finished Manufacture; and to judge from the Museum at Kew and in Jermyn Street, it will be considered incomplete without silk in every stage of its manufacture, boots, broadcloth, feather flowers, and the various machines used in their preparation.

5. The Collection of Ornamental Art at Marlborough House is strictly a Museum of Manufactures, both ancient and modern, gathered from the Animal, Vegetable, and Mineral Kingdoms, there being nothing whatever inapplicable to its purposes but such articles, if there be any, that neither have, nor are susceptible of, form or colour.

6. Then comes, lastly, the proposed Trade Museum of Manufactures, intended to "enable Manufacturers to compare the respective excellences of production,"* and which should, therefore, comprise specimens of every kind of result of human industry, whether it be a bed of coal discovered in a distant colony, an improved harrow or loom, a new or cheap description of earthenware, or a new process in ornamentation, the sole limitation being that the specimens must be somewhat recent, and must after a certain time be removed to make place for others.

Supposing these six Collections or Museums of Manufactures established on the same spot, it would be more than ever necessary to lay down some strict rules to limit the province of each, so as to prevent repetitions of the same articles, which, under their present management, are constantly occurring, and if these rules were too arbitrary, they would impair all the Collections.

In the case of pottery, for example, it would be difficult to determine whether pottery is more important in a historical, mineral, artistical, or commercial point of view, and therefore, whether pottery should be collected for the British Museum, the Mineral Museum, the Art Museum, or the Trades' Museum. The fact of its still being nothing but pottery, leads to the solution of the difficulty, viz., that all pottery should remain together, for no other reason than that it is pottery; that it is purchased, presented, or deposited for the benefit of potters, of porcelain painters, and, above all, of those whom it is wished to make wise and discriminating purchasers of pottery. It may be conceived that one vase may be desired to be added to the collection from its archæological interest, another from its graceful form, a third from the peculiarity of some flux used in colouring it, a fourth for its excessive cheapness, and a fifth to illustrate some application of machinery; there will, of course, be persons quite competent

* Second Report of H. M. Commissioners to the Crown, p. 31.

to give such recommendations, and they should in all cases be attended to; but that object being obtained, the vase which the professor requires for the instruction of his class, or the illustration of his particular theory of manufacturing science, should be placed in the public collection of pottery, where it would always be available for study or examination. But the question of the arrangement of this and other vases should depend upon the convenience of the public visiting the collection, more than upon the particular view of industry taken by those who recommend the acquisition of such articles.

What has been said in the case of pottery applies equally to every other branch of industry. To investigate the laws upon which good and effective calico-printing depends, requires the co-operation of the artist, the chemist, the engineer, and perhaps the botanist; but there certainly is no valid reason for a separate collection of printed calico in the charge of the professors of each science.

It is therefore submitted, for the consideration of the Commissioners, whether they should not direct their attention to the formation of *one* Museum only at Kensington, of which the existing and proposed collections above enumerated should form the nucleus, and that it should comprise all that the most competent people consider it advantageous to preserve for the education of the public. Further, that the arrangements of this Museum should simply follow that which already exists in the commercial arrangements of the industrious part of the nation who are to visit the Museum, and for whose instruction it is prepared, and could, perhaps, be best based upon a classified census of the population. Thus, there would be a pottery department for potters, and a calico printing section of a great cotton class for calico printers, comprising in each case the raw materials, the machinery necessary for its production, and illustrations of what has been and is produced in each department most worthy of study or observation, whether in an artistic, scientific, or commercial point of view.

I trust I shall not be understood to dispute the advantages of the division of the consideration of human industry into the four departments of Raw Produce, Machinery, Manufactures, and Fine Arts, adopted in the Exhibition of 1851. In taking a comprehensive view of any industrial process, it must inevitably be considered under these four heads, or Physically, Mechanically, Commercially, and Artistically. It requires a different order of mind to give a competent opinion or useful instruction in either of these departments, and the more closely each person keeps to his own particular point of view, the more advantageous will be his labours and researches. As, however, the science of each is, with very few exceptions, concerned in *every step* of a process, it is recommended that there should be but one collection of articles, to which each and all might go for study or illustration. And it is submitted, that

the most useful and even the most philosophical classification of a Museum is that which already exists among the people who are to visit it, who have arranged themselves into groups and families, for the supply of their mutual wants, and into whose service it is wished to bring all the science and art which is available for ministering to those wants.

It may be objected that of the thousands who visit a collection, such, for instance, as the Exhibition of 1851, there are very few who do so for real purposes of improvement. This is certainly true of the idle part of the community, and even, to some extent, of the industrious portion, who are perhaps bent upon holiday-making, and glad to escape from the subjects of their constant thoughts and labours. This sort of idle curiosity is one of the facts that must be considered and taken advantage of, while the principal object must be to supplant it, nothing being so likely to leave the mind of the visitor in an equally blank state after his visit as before, as to present to him a series of objects having no relation to one another, *that he can understand*, and which, therefore, constantly tend to efface one another in his mind. I would submit, that there are no means so sure to avoid this evil as to render the management of the Museum a means of concentrating the attention of visitors on one subject, or one process, and to raise their respect and wonder for the science, skill, labour, and genius which have been expended in all countries, and in all ages, upon any particular trade. This will be true in an especial degree if the trade is one in which the visitor is himself engaged ; it may substitute humility for conceit, inspire some with a desire and a determination to emulate those who have preceded them, and induce them to seek the advice and instruction of those whose position and acquirements may qualify them to afford it.

As mere consumers or purchasers of the produce of industry, such an arrangement would also raise their respect for those who minister to their wants, and would gradually induce a demand for what is really beautiful and excellent, instead of what is novel and strange, and thus not only raise their own character, but that of the manufacturers and dealers in such articles, whose interest would not be so much as at present opposed to their duty, and often, no doubt, their wishes, they being constantly called upon by an uninstructed public to supply that which merely bears *the show* of beauty and excellence, and leads to a taste which has made us a byword among nations, and deceptive artifices which are a disgrace to our manufactures.

Instead, therefore, of seeking to form a new and separate Museum of Manufactures, the question resolves itself merely into the introduction of the commercial element into the great Museum proposed, making the whole of it bear directly upon the character of the daily and hourly productions of our looms and workshops. In every hall or gallery containing the productions of any particular trade, I would suggest

that there should be places set apart for the temporary reception of specimens of recent produce presenting any sort of novelty, as to substance, form, design, or economical production, where manufacturers, dealers, or importers should, under certain restrictions, or, if necessary, on the payment of certain fees, acquire the privilege of showing specimens of their wares by the side, or in the vicinity, of articles of a similar nature produced by different nations in different ages, and by every kind of process. Thus would their merits be best appreciated, and their defects exposed. This permission of deposit should only be granted for a limited time; at the expiration of which, should any article which has been exhibited prove sufficiently interesting or admirable to be valuable for public instruction, it might be added to the permanent collection.

If, on the other hand, it be determined to settle the claims of the various departments of knowledge among several distinct collections, and the Trades' Museum becomes only a collection of those articles whose interest is ephemeral, with the chance of an occasional *chef d'œuvre*, the Museum formed of objects which would improve and instruct the visitors would be severed from that where the visitors would be expected to act as judges, and thereby instruct and improve the manufacturers; and either the Trades' Museum would be unfrequented, or frequented at the expense of the attendance on what is really elevating and instructive. If, under the first supposition, it be deserted by the visitors to the institution, it would soon lose the support of first-class manufacturers, and become a worthless collection of abortive attempts at improvement. In the second, even if rendered attractive by vigorous management, and by the aid of fountains, flowers, and other accessories, the crowd would be drawn away from the more instructional departments, and the elevating influences of history, science, and art would be lost to the great bulk of the visitors.

HENRY C. OWEN, Captain R.E.

January 1854.

APPENDIX N.

CORRESPONDENCE between HER MAJESTY'S COMMISSIONERS and the TREASURY on the SUBJECT of the SALE of the BERNAL COLLECTION.

SIR, Palace of Westminster, February 28, 1855.

I AM directed by Her Majesty's Commissioners for the Exhibition of 1851 to request that you will call the attention of the Lords Commissioners of Her Majesty's Treasury to the approaching sale of the

Collection of Works of Art formed by the late Mr. Bernal, and generally known by the name of the "Bernal Collection."

It is the opinion of Her Majesty's Commissioners that it would be highly desirable that this important Collection should be secured for the use of the nation, while they feel that even if Her Majesty's Government should not be willing to incur the responsibility of purchasing the whole of it, or permanently to expend so large a sum as would be required for the purpose, it might probably be most advantageous, in a pecuniary point of view, to buy the Collection as a whole in the first instance, with the ultimate intention of selling off such portions of it as might not be eventually required.

Under present circumstances, however, and bearing in mind that the commencement of the sale will take place as early as Monday next, the 5th of March, the Commissioners are not prepared to urge the adoption of so extensive a measure; but they would suggest that the alternative course might be advantageously followed, of sanctioning the outlay of a specific sum for the purpose of making purchases at the sale, in conformity with some fixed principle of selection.

To this end they have, as a preliminary measure, requested the properly qualified officers of the Science and Art Department of the Board of Trade to prepare, with such professional assistance as they may find necessary, a report on the subject of the collection, in which will be found embodied the views entertained by Her Majesty's Commissioners, as to the principles upon which a selection of articles to be purchased might be advantageously made in the interests of the public.

The Commissioners have directed that this report shall be transmitted for the consideration of the Lords of the Treasury at the earliest possible period, and before the close of the present week, accompanied by a marked catalogue of the collection, showing the articles which, upon the principles explained in the report, it may be desirable to purchase, and the prices up to which authority might, in the opinion of the Commissioners, be given to the agent employed on the occasion, to advance his biddings if necessary.

The Commissioners are not in a position at this moment to state the exact amount which will be required for the purpose of making the suggested purchases; but the necessary particulars on this head will be forwarded by them at the time of transmitting the report and marked catalogue above referred to.

Should the Lords of the Treasury agree with Her Majesty's Commissioners in their view of the expediency of the purchases in question, and the various articles proposed to be purchased be secured accordingly, the Commissioners apprehend that it will rest with their Lordships to decide upon the place or places in which the collection so formed should be ultimately deposited. Pending, however, the decision of this question,

which it would seem desirable to reserve for ulterior consideration, connected as it necessarily is with the wider question of the proposed incorporation of Arts and Manufactures, the nucleus of which is already possessed by the British Museum, the Board of Trade, and the Commissioners themselves, the Commissioners conceive that the collection might in the mean time be made without delay of great practical utility, by means of being exhibited in a complete state to the general public.

As respects such an exhibition of it in the metropolis, it would afford Her Majesty's Commissioners much pleasure to co-operate with Her Majesty's Government in such manner as might be approved by the Lords of the Treasury for the purpose of ensuring its proper exhibition.

The Commissioners at the same time consider that it would be highly conducive to the interests of Art and the cultivation of the public taste, that the collection should be subsequently circulated in the principal provincial towns, especially in the seats of manufacture, where the producers would have an opportunity of availing themselves of the numerous suggestions which such a collection would offer for the practical improvement of manufactures; an opportunity which, in the present state of the different Local Museums, is seldom offered. The public at large would at the same time have the advantage of properly inspecting and profiting by the collection previous to its being transferred to its final place of deposit. The Commissioners are of opinion that such a course would be highly appreciated throughout the country.

In submitting this important subject for the early and favourable consideration of the Lords Commissioners of Her Majesty's Treasury, Her Majesty's Commissioners would, in conclusion, suggest, that if the contemplated outlay should be authorized by them, their Lordships should direct measures to be taken for the purpose of preventing the danger of an unnecessary outlay of the public money arising out of a competition between various public bodies or departments anxious to obtain any of the articles in question, as has so often occurred on previous occasions, and the evils of which are, they feel assured, fully appreciated by their Lordships.

I have, &c.

The Secretary to the Treasury. EDGAR A. BOWRING.

SIR, Palace of Westminster, March 2, 1855.

WITH reference to my letter of the 28th ult. on the subject of the purchase for the use of the nation of a portion of the "Bernal Collection" at the forthcoming sale, I am now directed by Her Majesty's Commissioners to transmit to you herewith, for the information and consideration

of the Lords Commissioners of Her Majesty's Treasury, the report of Messrs. Cole and Redgrave of the Board of Trade, and the marked catalogue of the collection therein referred to.

Their Lordships will perceive that the total sum which it is proposed should be allocated for the purpose of making the necessary purchases will not exceed 16,000*l.*

I have, &c.

The Secretary of the Treasury. EDGAR A. BOWRING.

REPORT of Messrs. COLE and REDGRAVE.

THE articles in the Bernal Collection marked in the accompanying catalogue have been selected on the following grounds:—First and mainly, on account of the suggestions they are calculated to afford for improving manufactures; beauty and excellence of style as decorative works, and for skilful workmanship; as illustrations of technical processes, both from an artistic and scientific point of view; and lastly, for their interest as historic specimens of manufacture and ornament.

Although some of the specimens possess considerable archæological value, that consideration, and still less mere rarity or fashion (as in the case of costly examples of Sèvres porcelain vases), have not been admitted as reasons for selection. Some specimens of Italian majolica ware, however, combine archæological interest with peculiarities calculated to offer valuable hints for the manufacture of modern pottery; but as it is understood that the Trustees of the British Museum are likely to purchase them, they have not been included in the list of selections, as they otherwise would have been.

According to the instructions received, an estimated value has been marked in the catalogue against all articles which have been considered by Mr. Robinson, the Curator of the Museum at Marlborough House, in concert with Mr. John Webb, as being worth above 10*l.*: the accompanying list shows the aggregate of these, amounting to the sum of 10,976*l.* A further selection of articles, estimated at 10*l.* and under, amount in the gross to the sum of 4,598*l.*: the total being 15,574*l.* In a case like the present, where the articles are very numerous, and the competition also likely to be great, it would be more economical to employ a dealer rather than a public officer to make the purchases; and assuming the cost of the agency for purchase to be 2½ per cent. on this sum, the total amount required for the purchase would be 15,963*l.* 7*s.*

It is understood that the articles to which a specified price is affixed in the margin of the catalogue are not to be purchased at higher rates

than the amounts so stated. It must be expected that the operation of this rule will deprive the nation of articles which it ought certainly to possess. With respect to the class of articles estimated at 10*l.* or under, amounting in the gross to 4,598*l.*—provided this total is not exceeded, some latitude in the price of the separate articles ought to be allowed to the agent employed to purchase.

In order to render this collection of the greatest public use, it is expedient that the articles should be exhibited in the principal seats of manufacture, especially at Birmingham, Sheffield, the Potteries, Manchester, &c., and the arrangements described in the accompanying papers, which are already successfully in action, for exhibiting, in the local Schools of Art, selections from the Marlborough House Museum, might be applied in this case. In the event of such a course being followed, it would be necessary to estimate for the expense of the local Exhibition; to provide security against accident, glass-cases, frames, packing-cases, travelling-vans, and the organization of proper superintendence. For these purposes an estimate of not less than 1,500*l.* should be made.

It has been already remarked that there are reasons to believe that the Trustees of the British Museum desire to obtain some of the specimens of majolica on account of their archæological interest. Should the Trustees be authorized to make purchases, it would appear desirable that the specimens bought should not be separated from the collection until the public has had an opportunity of seeing the whole purchases together; and as the present rules of the Trustees do not allow articles to be removed from the British Museum even to other public institutions, it would be expedient, especially for the sake of the provincial exhibitions, that the articles should be exhibited in the manufacturing districts before they are deposited in the Museum.

(Signed) HENRY COLE.
RICHARD REDGRAVE.

ENCLOSURE in the REPORT of MESSRS. COLE and REDGRAVE.

"THE Lords of the Committee of Privy Council for Trade are desirous that Local Schools of Art should derive all possible advantages from the Central Museum of Ornamental Art, and are prepared to afford assistance in enabling them to do so. Their Lordships are of opinion, that if articles belonging to the Central Museum were circulated among the Schools of Arts, and publicly exhibited, the instruction given in the schools would be aided; the formation of local Museums encouraged; the funds of the local schools assisted; and the public knowledge of taste generally improved.

"With these views, my Lords have directed that collections should be

made of articles from each of the divisions of the Central Museum, namely:—glass, lace, metals, ivory carvings, &c., pottery, paper-hangings, and woven fabrics; and that they should be sent in rotation to local schools making due application and expressing their willingness to conform to the following conditions:—

"1. That adequate provision be made by the committee of the local schools for exhibiting, during a limited period, the collections to the students and the public, both in the daytime and the evening.

"2. That the committee of the school endeavour to add to the exhibition, by obtaining loans of specimens from the collections of private individuals in the neighbourhood.

"3. That the students of the schools be admitted free; but that all other persons, not students, pay a moderate fee for admission, which should be higher in the morning than the evening. To enable artizans and others employed in the daytime tos hare in the benefits to be derived from the collection, the fee on three evenings in the week should not exceed one penny each person.

"4. That any funds so raised should be applied—1st, To the payment of the transport of the collection to the school, and other expenses of the Exhibition; and, 2nd, That the balance be appropriated in the following proportions, namely:—One quarter to the masters' fee fund; one-half to the purchase of examples for a permanent museum, &c.; and one quarter to the general fund of the school. Committees of schools desiring to receive the collections are requested to make application in the accompanying form."

Treasury Chambers,
March 8, 1855.

SIR, MY LORDS AND GENTLEMEN,

THE Lords Commissioners of Her Majesty's Treasury have directed me to acquaint you that my Lords, having referred your Report and Letter, dated the 28th ultimo and 2nd March respectively, to the consideration of the Lords of the Committee of Privy Council for Trade, have been pleased, on their recommendation, to sanction purchases being made on behalf of the Department of Science and Art at the sale of the "Bernal Collection," subject to the following rules and understanding:—

1. That the articles be selected with a view to their utility as specimens worthy of imitation in shape, style, colour, &c., by our manufacturers, and with the view of encouraging good taste and general improvement.

2. That no higher price be given for any article than that marked in the catalogue delivered to this Board.

3. That the entire sum to be expended shall not exceed 12,000*l.*

I am at the same time to add that my Lords have been pleased entirely to approve of the proposal to render this collection accessible to persons in the provinces, as being in strict accordance with the useful purposes for which my Lords have been induced to sanction this expenditure.

I have, &c.

JAMES WILSON.

The Commissioners
for the Exhibition of 1851.

APPENDIX O.

MEMORIAL of the ROYAL ACADEMY of MUSIC praying for the GRANT of a SITE on the KENSINGTON GORE ESTATE.

To the COMMISSIONERS of the EXHIBITION of 1851.

THE Directors of the Royal Academy of Music beg leave to submit, for the consideration of the Commissioners of the Exhibition of 1851, a statement of the nature and objects of this Institution, with a request that a site may be assigned to them on the estate at Brompton belonging to the Commissioners, for the purpose of erecting a building suitable for the accommodation of the Royal Academy of Music.

In the year 1822 Lord Westmoreland brought forward a plan for the establishment of an Academy for the instruction of Music in all its branches, for which, up to that time, no general school or institution existed in this country. This plan was approved of by His late Majesty George the Fourth, and, thus recommended, a considerable subscription was in a short time obtained, and the Academy was established in the following year.

In 1830 a charter of incorporation was granted, constituting the Institution a corporate body, under the title of "The Royal Academy of Music."

In 1834 a fourth part of the proceeds of the Great Festival in Westminster Abbey, amounting to 2,250*l.*, was given to the Academy, which sum was invested in the names of trustees, and the interest appropriated to the establishment of King's Scholarships. Two scholars, one female and one male, are elected every year for the term of two years, so that there are always four on the foundation: these receive their musical education gratuitously.

The number of pupils received into the Institution since its foundation amounts to nine hundred and seventy-eight. Many of these now hold the first position in the principal orchestras of the country, many have distinguished themselves as vocalists, and some have sustained a high reputation as composers; and there can be no doubt that the great majority of the pupils, who have qualified themselves to act as teachers, have materially contributed not only to the present state of improvement in the art, but also to the establishment of a better system of instruction in the metropolis as well as in the country.

The number of students at present in the Academy is one hundred and twenty-one in all; namely, seventy-four females, and forty-seven males; a strong proof of the high estimation in which it is held by those persons who are connected with the musical profession, more especially as, from the want of other funds, the students are required to pay nearly the whole expense of their education.

The income of the Academy has for some years been about 4,000*l.*, the greater portion of which, about 3,500*l.*, is derived from the contributions of the pupils. The interest on the funded property, 7,500*l.*, is 236*l.*, and the amount of the subscriptions about 300*l.* per annum.

This short account will be sufficient to show the nature and objects of the Institution. As an educational establishment, the Royal Academy of Music has eminently fulfilled the purpose intended when the means at its disposal are taken into consideration. But the state of the funds has not, at any period, been in a prosperous condition; indeed it has had to contend against pecuniary difficulties of such a character as, on more than one occasion, to threaten its very existence.

The actual amount of the funds, after all debts shall have been paid, is about 6,500*l.*, including the grant from the Westminster Abbey Festival. The committee, therefore, have only a sum of about 4,000*l.* at their disposal to apply to any building purposes—a sum barely sufficient to make the necessary provision for the accommodation of the Academy in the event of a site being given up to it.

It might, however, be highly desirable to combine, with the rooms required specially for the use of the Academy, a large music hall, a music library, and rooms for the exhibition of musical instruments, which would not only be highly serviceable to the musical public generally, but have become almost necessary from the present advanced state of the art.

The cost of such buildings would probably be about 20,000*l.*, a sum far beyond what the Directors of the Institution could provide. But as the large music hall might be available for other public bodies who might hereafter be located on the property of the Commissioners, some assistance might be obtained from them. A sum of money may possibly be obtained on debentures, to be issued on the security of the buildings,

from persons interested in the advance of the musical art; it being understood that the large room might be let for concerts, or holding public meetings, under such regulations as may be approved of by the Commissioners.

The plans of any building proposed to be erected would, of course, be submitted to the Commissioners for their approval; but should it be necessary to incur any additional expense on account of external decoration or architectural ornament, the Directors of the Royal Academy of Music venture to hope, that for such expense they might receive some aid from the Commissioners.

LEINSTER.	GEORGE CLERK.
WILTON.	R. R. VYVYAN.
HOWE.	A. F. BARNARD.
GERALD FITZGERALD.	JOHN CAMPBELL.
SALTOUN.	QUINTIN DICK.
WROTTESLEY.	WYNDHAM GOOLD.

APPENDIX P.

CIRCULARS on the SUBJECT of INDUSTRIAL INSTRUCTION issued by the SOCIETY OF ARTS.

I.

Society of Arts, Manufactures, and Commerce,
SIR, Adelphi, London, January 25, 1853.

I AM instructed by the Committee on Industrial Instruction of the Council of the Society of Arts to direct your attention to the present aspect of the great national question, the education of the people.

The Committee believe that the present is a time peculiarly auspicious for pressing the settlement of this question on the Government and the Legislature. Many causes conspire to this: the adjustment of those political questions which have engrossed the attention both of the Legislature and of the people for the last forty years; the interest which all classes now take in the progress of social reforms; the leisure afforded by peace abroad and profound tranquillity at home; the growing prosperity of the country; the tide of emigration steadily setting in to our colonies; these and other circumstances of a like tendency, point to the present as a most favourable juncture to press for a satisfactory arrangement of this great question.

The Committee, taking up that portion of the subject which lies more immediately within their province—industrial instruction as a means of

promoting arts, manufactures, and commerce, the chartered objects of their Society—only give expression to a widely-spread opinion—an opinion which has now deepened into conviction since the products of the industry of the nations of the earth were brought into emulative comparison at the Great Exhibition of 1851,—that industrial instruction and a suitable training bearing on the realities of life, and fitted to the wants of the times, are the pressing needs of our day. They are needs which the improvement of our ancient educational foundations, and the adaptation of existing institutions, might be made in a great degree to supply. Little of solid advantage is now to be derived from those ample funds which the munificence and the sagacity of our forefathers in no stinted measure appropriated, under the name of Free Grammar Schools, for the teaching of the elements of the only knowledge then in being—a munificence and sagacity which their descendants on the other side of the Atlantic have justly appreciated in founding schools in which the modern requirements of society are amply provided for. They have profited by the example. With us the teaching has remained nearly stationary, while our knowledge has been almost infinitely augmented.

The Committee believe that the great want of our time is a thorough system of industrial instruction. On this point they would desire to remove an erroneous impression very generally entertained. By industrial instruction they do not mean to indicate a system which would substitute the school for the workshop, or the college for the factory. They would never accept attendance at a lecture session in lieu of an apprenticeship. They believe that the practice of an art or the manipulations of a trade are best learned as realities, as the stated occupations of everyday life. But they are equally convinced that a knowledge of the principles of the sciences on which arts or trades are founded is an indispensable element in the instruction of the well-skilled workman. It cannot be denied, that a knowledge of the principles of drawing must be useful to the draughtsman, or that a familiarity with the properties of the lever assist the engineer.

Among the suggestions the Committee would throw out for your consideration, and on which your opinion is respectfully desired, they would indicate the following, as embodying, at least virtually, some of the great principles which ought to be recognised in any national system of industrial instruction:—

1. The improvement of the endowed grammar schools, more especially of those which are not intimately connected with the universities; to enlarge them so as to introduce among the subjects taught the elements of industrial instruction.
2. The conversion of the present mechanics' institutions, where practicable, into industrial colleges.

3. The introduction into proprietary schools and colleges of a system of instruction better suited to the wants of the middle classes.
4. That aid, in the first instance at least, should be afforded by supplying, at a reduced cost, books, maps and models, diagrams and apparatus.
5. That systematic and defined courses of study be recommended.
6. That something in the nature of a system of prizes, exhibitions, or scholarships be provided. Innumerable rewards exist at present for the cultivation of classical learning: whyshould there not be some for the promotion of industrial knowledge?
7. To hold public examinations at certain central localities, for the purpose of awarding such prizes.
8. To award to candidates who should distinguish themselves certificates of different degrees of merit. Such certificates, if carefully awarded and after due examination, might be made, as all analogy shows us, of great importance.

There are, no doubt, other improvements which may be obvious to you, and to those who long have taken an interest in the question. If you will suggest such, the Committee are prepared to receive them with respectful attention. They now appeal specially to those who in other days have laboured in the cause; to those who pressed their views on an indifferent people and an apathetic legislature; to those who persevered, though hope was faint and success far distant, to show in their communications to the Society that their convictions still continue unchanged, and that the necessity for measures of this kind, so far from having passed away, is becoming hourly more urgent. The views thus submitted to them the Committee propose to embody fully in their report.

It is generally understood that great efforts will very soon be made to introduce, on a national scale, improvements in the existing modes of industrial instruction. It will conduce to the true welfare of the country, that changes authoritatively suggested should be in accordance with the convictions, nay even with the prejudices, of the people. Self-supporting, institutions of this kind must be, or they will dwindle away; self-governed too, or they will become open to suspicion, or exposed to peculation.

The Committee believe, if the friends of social improvement will now come forward, and merge their minor differences and matters of detail in the recognition and adoption of the great cardinal principles which should rule the development of this great phase in our social progress, that success may be achieved. These principles are self-support, self-government, and unity of action. The abnegation of special plans and cherished theories is essential to success, because no man nor body of men can hope

... views without modification or change. It is a ... of all successful social reforms, that they are the ... compromises—the results of reciprocal concessions. ... of all classes are recognised and preserved. Indeed, ... understand how it can be otherwise in a free country.

... will meet after the recess on the 10th of February, I ... obliged if you will favour me with your reply, at your earliest ... before the 8th of February, if possible.

I am, Sir,

Your very obedient servant,

EDWARD SOLLY, Secretary.

II.

Society of Arts, Manufactures, and Commerce,

SIR, Adelphi, London, February 5, 1853.

I AM desired by the Industrial Instruction Committee of the Council of the Society of Arts to draw your attention to the feeling so generally manifested for improving the character of the instruction of the industrial classes.

It seems to be obvious that the increased facilities for the communication both of material and thought, have rendered production more dependent on the resources of applied science than it formerly was, while the more general cultivation of taste has led to a demand for a higher artistic development of form as applied to manufactures. The triumphs of manufacturing skill in modern times are chiefly connected with mechanical inventions, or with discoveries in chemical and physical science; and industrial competition has resolved itself into a competition of intellect, rather than that of the cost of unskilled labour, or the accidental indigenous possession of the raw material.

While science has effected this silent revolution in production, our institutions for special education have not expanded themselves so as to teach the principles upon which manufacturing processes depend.

It is, therefore, necessary that the preliminary technical education of the industrial classes should be more suited to the realities of life, and to the requirements of modern industry. By industrial instruction is not meant a system which would substitute the school for the workshop, or the college for the factory; nor is it for a moment contemplated to substitute scholastic learning for the practical training of an apprenticeship, but it is obvious that the latter might be made more efficacious, and its acquisition more easy if the apprentice-pupil had previously learned the *principles* of Art and Science upon which his industry depends. It would be absurd, for example, to suppose that any school could turn out a pupil a ready formed machine-maker, yet the labour of the mechanical

engineer in giving practical instruction to his apprentice, would be not only lightened, but be made more efficient, if the latter had been previously taught mechanical drawing, had learned the properties of the lever, the pulley, and the wedge, and knew the nature of, and the difference between cast iron, wrought iron, and steel. While, therefore, the practical training would be left as heretofore, it cannot be denied that a knowledge of the principles of the sciences on which arts or trades are founded is an indispensable element in the instruction of well-skilled workmen.

The Committee would remark that the other great producing states of Europe now act upon this conviction, and have founded industrial schools and colleges for the preliminary instruction of their producers, the pupils being in great demand by manufacturers.

Among the suggestions which the Committee would throw out for your consideration, and on which your opinion is respectfully desired, are the following, which embody, at least virtually, some of the great principles to be recognised in any national system of industrial instruction :—

1. The improvement of the endowed grammar schools, more especially of those which are not intimately connected with the universities, and their enlargement, so as to introduce among the subjects taught the elements of industrial instruction.
2. The conversion of the present mechanics' institutions, where practicable, into systematic industrial schools for artizans.
3. The establishment of a higher class of schools for those who are likely to have charge of manufacturing establishments.
4. That aid, in the first instance at least, should be afforded by supplying, at a reduced cost, books, maps and models, diagrams and apparatus.
5. That systematic and defined courses of study be recommended.
6. That something in the nature of a system of prizes, exhibitions, or scholarships be provided. Innumerable rewards exist at present for the cultivation of classical learning : why should there not be some for the promotion of industrial knowledge ?

Numerous memorials, urging an improvement in industrial instruction, have been signed by the leading men of the chief manufacturing towns of this country, and, in consequence of these, it is obvious that great efforts will soon be made to introduce, on a national scale, improvements in the very imperfect modes now existing for obtaining industrial instruction. But it is most important that any changes or additions authoritatively suggested should be in accordance with the convictions of the manufacturers themselves ; and it is with this view that we would desire to draw your general attention to the subject, keeping in view that the character of instruction given to the working artizan may be different in

kind and degree from that necessary for the manufacturer who has to take general charge of an extensive factory.

We trust that you will favour the committee with your views on these subjects for their consideration, as they are drawing up a report embracing, as fully as possible, the evidence received by them; for while they believe the great want of our time to be a thorough system of industrial instruction, in connexion with the practical training in the workshops of industry, they are convinced that this can only be effectually carried out with the full concurrence, sympathy, and support of those industrial populations for whose benefit it is intended.

As Parliament will meet, after the recess, on the 10th of February, I shall feel obliged if you will favour me with a reply at your *earliest convenience*.

By order of the Committee,
EDWARD SOLLY, Secretary.

EXTRACTS from REPLIES to the above CIRCULARS.

From Mr. A. Aitkin, chief designer to Messrs. Winfield, of Birmingham

"IT is with much pleasure I have to acknowledge your circular of February 5th, directing my attention to the necessity which exists for providing for the industrial classes of the community a preliminary technical education. My own conviction, for a number of years, has been that this is a most important desideratum. I have, therefore, much satisfaction in recording my opinion in favour of the movement. At the same time, permit me to add that my conviction has been strengthened by fourteen years' experience and intercourse with the class it is more particularly intended should be benefited by the introduction of a course of technical education.

"In the period alluded to I have had the most favourable opportunities for observing the natural ability, ingenuity, and physical endurance of English mechanics. The result of my observations has been to produce the conviction in my mind, that even great natural qualifications, guided only by experience, will urge but an unequal contest against (other circumstances being equal) workmen trained to labour with a knowledge of science, and that therefore the most judicious course to be pursued by us is to supplement on the natural capabilities of English workmen an education having a direct reference to the several branches of manufacture in which they are engaged. Without this precaution, it is not unreasonable to expect our superiority, as producers of the useful and substantial, may be challenged, and the extended boundaries wherein the products of our manufactures find a ready market may suffer some diminution in consequence.

"The Second Report of the Royal Commissioners, the various lectures delivered before the Society of Arts on the results of the Exhibition of 1851, and the evidence collected by Dr. Playfair as to the industrial instruction movement on the continent, are each and all conclusively demonstrative and significant as to the efforts now being made by the various continental states, with the intention of training up manufacturers and artizans, in order the better to contest with us in our position as manufacturers of what is most desired in the several marts of commerce, viz., useful and substantial articles at a low rate of cost.

"It has hitherto been, and, I trust, will continue to be, alike the glory and boast of England, that the raw material which may have been quarried, cultivated, or produced at the antipodes, and imported, has, notwithstanding the cost attendant upon sea voyage, been smelted, converted, manufactured, spun, or wove, and returned whence it came but little increased in cost, certainly not in proportion to the useful purpose it serves in its new form and application. The ease with which this has been effected by us has excited the desire for competition; and it cannot be denied that, once started in the race, the manufacturers and artizans of other countries are much more favourably situated than we; for already with them an industrial system of education exists; their museums contain collections of the raw materials, the manufactured objects, and the machines by which the several objects were produced, or which materially assisted in their production. In collecting these together, the various Governments or States have spared neither cost nor trouble. The consequence is, that the difficulties laboured under in the entire construction of a machine, or the discovery of a process, are removed, and the defects in either may at once be detected or remedied. Further, attractive displays of objects, machines, or processes are alike suggestive, attractive, and instructive. They are admirably calculated to arouse the inventive and constructive faculties, already quickened by an industrial education to detect the rationale of construction, &c.—these several adjuncts taken collectively render those in possession thereof dangerous opponents, when arrayed against practice only, unaided by scientific skill, without which it may be said that sure and certain results are not to be calculated upon. In truth, the time has now arrived to which every exhibition of manufacturing art has been tending, viz., to show where intelligence and science has been brought to bear, or called in to aid. That the manufacturer who has done so the most liberally has been correspondingly the most successful, or if personally the expenditure has not in his own case produced a commensurate return, yet eventually the craft, trade, or manufacture has been largely benefited thereby. The crude and empirical must henceforth have no place in manufactures; they must be cultivated systematically; to aid them the whole arcana of science must be laid open; the intellect cultivated of those who are to be engaged

therein. As a legitimate benefit or consequence which would flow therefrom, human labour would be lightened, certain results would be arrived at, cost would be diminished, and comfort would be diffused to a much greater extent than it now is.

"It may appear somewhat unnecessary that now any doubts should be expressed as to the value of science as applied to industrial pursuits; and it matters but little whether these exist or are manifested by actual denial of the truth, or the refusal to adopt the principles which science has laid down for our guidance. The far-seeing and enlightened few have maintained the excellence and superiority of the laws which regulate and control matter; but the adoption and recognition of such intelligent views have been slow, and have been determined by the spread of intelligence. The importance of scientific knowledge over mere manufacturing experience has been repeatedly demonstrated. Thus, in 1782, we find an intelligent D.D. lamenting (in a paper read before the Royal Philosophic Society of Manchester) that so few of our 'dyers are chemists, and our chemists dyers;' and in alluding to the elements of 'taste' and 'finish,' we find him saying, 'Our manufacturers must now have, not merely that strength of fabric and that durability of texture in which once consisted their highest praise; they must have elegance of design, novelty of pattern, and beauty of finishing.' To supply the wants already indicated, a public repository for chemical and mechanic knowledge is recommended. A *museum* is a prominent feature, to consist of 'all such *machines* in the various arts which seem to bear the most distant relation to our own manufactures; all the processes in those of *silk*, *wool*, *linen*, or *cotton*, should there be delineated. There should also be provided an assortment of the *ingredients* used in *dyeing* and *printing*, and for the purpose of *experiments*. A *superintendent* would be necessary to arrange and apply this collection to its proper use. He should be a man well versed in *chemical* and *mechanical knowledge*. He should deliver *lectures*, and give *advice* and *assistance* to those who wish to obtain a better knowledge of the arts.' An intelligent writer on the chemical principles of the metallic arts, in 1790, thus forcibly paints the difficulties which the mere mechanic labours under:—'The smelting of ores, the manufacturing of metals, the elegance and durability of dyeing, the making of glass, porcelain, &c., all derive their beauty and utility from the same source. Most of these processes are conducted by artists who are entirely ignorant of their principles, but have acquired a considerable degree of certainty and ingenuity from practice; but should any unexpected circumstance arise which they have not experienced before, they are involved in a difficulty which all their practice cannot extricate them from, and which, in all probability, can only be surmounted by a proper reference to and application of the principles of the art; so that many losses must unavoidably be incurred in working

from the want of such fundamental knowledge.' So much, then, for the recognition in time past of a want of industrial training, to supply which to a certain class the Museum of Economic and Practical Geology is well fitted; but, from its limited extent, it cannot possibly do a single tithe of what in comparison is required, nay, demanded. Its professors, however, in their inaugural and introductory lectures to the session of 1851-2, supply some very excellent evidence in favour of scientific education. Valuable ores have, in ignorance of their true value, served to macadamize highways. A most valuable mine, in the hands of an ignorant proprietor and superintendent, produced only pecuniary loss; while another, in the possession of an educated and skilful miner, though comparatively poor in metal, produced a fair return for the capital embarked.

"The advantages to be derived from the manufacturers, superintendents, and mechanics of our great centres of industry having placed for their acceptance the means of acquiring a knowledge of those sciences which enter more particularly into the manufactures of the particular locality, cannot be suitably estimated or appreciated in our present state of transition between a determination to adopt science on the one hand, and to cling to practice only with the other. Let us take Birmingham for example. Can any thinking individual, who has troubled himself with the consideration of how little *is*, but how much *should* be, known by those who are engaged in the various manufactories, doubt as to the advantages which would accrue to the manufacturer who thoroughly understood, or who had superintendents who equally understood, the rationale of the several processes gone into. Of the true philosophy of the sciences of metallurgy and chemistry how little is known of either by those who should understand both. Even the ability to produce an analysis of a metal is what is at present possessed by but few. And this is of the utmost importance to the manufacturer, and would go far to resolve many of the difficulties which from time to time present themselves alike to the annoyance of employer and employed. At such a period as the present, when the advance in prices of metals has directed the attention of the speculative to them; when new ores of copper from hitherto unknown localities may be expected to be brought into the market, the advantages of analysis in arriving at a knowledge of their true value in a money point of view, and also what such would be best fitted for, will be readily appreciated. It was with no small amount of satisfaction the writer of this heard, a few days ago, a leading ironmaster in Staffordshire declare the obligations which he considered were due to scientific analysis. As an instance, he would cite the following:—"In the purchasing of iron ores he did not, as formerly (cheap now as the conveyance by railway is), send for a waggon load of ore; he got a sample, sent it up to the Museum of Economic Geology, and he

relied upon the opinion returned as to the per centage of metal, and regulated his purchasing of the ore and the price to be paid for it accordingly." Much as electro-metallurgy has been advanced, it doubtless would have been much more so had chemistry formed a part of the education of those who do the manipulative part of the process. To metal rollers, how important to know the effect of temperature upon the various mixtures; while to brass founders and others, how varied in shade or colour might they not secure the surface of the works executed by them did they but know a little of the effect of the acids on copper and its alloys. In the matter of imparting colour to metals the French are yet much our superiors; and the most exquisite colours have been and are produced by Frenchmen, or from French recipes. From a want of a knowledge of the effect of change in temperature upon the action of acids, how much time and money is not unfrequently lost by the manufacturer. The several deficiencies alluded to will afford some idea as to what is to be gained by a small infusion of technical education. A 'little knowledge' to aid us in this particular will, it is to be hoped, not prove a 'dangerous thing.'

"The value of scientific knowledge being admitted, and its want demonstrated, it is to be hoped that the same measure of liberality will be exercised to aid in its diffusion as has already been done in the matter of design as applied to manufactures. Hitherto, as a rule, science has been studied with us by philosophers only, and manufacturers have been in general dependent on experience gained by practice. The value of science being admitted on the one hand and experience upon the other, it is in their union that the true value of both is shown to be. United, they stand secure, affording a mutual assistance to each other. The battery of Daniell developed the art of electro-metallurgy, but the practical knowledge of Spencer pointed out a purpose to which the same could be applied. This recognised science again came to the assistance of the newly discovered art, and the genius of a Faraday, a Daniell, a Smee, Shaw, Wright, and Napier, lent their valuable and efficient aid to its more complete and perfect development. The production of a cheap alkali by the French chemist Le Blanc, from the ordinary sea salt, is another forcible illustration of a want indicated by practice and supplied by science, and well calculated to display the rich stores which lie waiting to reward the scientific inquirer.

"Acknowledging the important end which is being served in the institution of schools of design, the writer is of an opinion that an equally important end would be served in the institution of schools for the purpose of imparting technical education to those engaged in manufactures, whether as principals or subordinates. The union of two such important elements as science and art, recognised by the state, and receiving assistance through a central institution, could not fail to operate

beneficially, by enabling manufacturers to secure intelligent workmen, whose knowledge might be turned to account in economising time and material, and in devising means to accomplishing an end, which would tell with equal effect on the comforts of the many, the profits of the manufacturer, and the national prosperity.

"It is, therefore, satisfactory to find that views so much in accordance with the wants of the day are recognised by the Royal Commission under the presidency of His Royal Highness Prince Albert, to whom we owe the Exhibition of 1851, and all the advantages which have resulted to trade and commerce therefrom, with the still more important prospective benefits to the national industry which is so clearly implied by Report No. 2, issued by the Royal Commission.

"A considerable amount of difference of opinion in all probability still exists, much prejudice, and, it may be, no little amount of ignorance as to the desirability of the said technical education. It will, however, be found that such has its origin in a mistaken view of the intentions of those who are the advocates of the measure. The same objections have from time to time been urged against schools of design; but not a doubt exists that, at the present time, these objections are being removed, as the advantages of such schools are becoming more apparent. In like manner industrial education will speedily make its own value apparent. This, however, must indicate to us the importance of such a system being recognised by the Government, until such time as the benefits derived therefrom present themselves in a tangible form. Then, indeed, it may be left to take care of itself. But, until then, it will the duty of our rulers to assist, encourage, and foster the more intimate connexion of science, art, and manufactures, and to afford facilities for the diffusion of a knowledge of the first principles which are likely to operate in simplifying, economising, or increasing production. In referring to your circular, the illustration which is given therein as to what is intended to be understood by industrial instruction, appears to be very clearly set forth. Clever manipulation is the result of practice, which can only be acquired in the workshop. A knowledge, however, of the principles upon which the various looms, machines, turning lathes, drilling, brewing, and punching machines act, with processes exhibited which are in common and everyday use in manufactories, could not fail to render the future manufacturer, artizan, or superintendent all the better fitted to fulfil the duties required of them in their several situations. An intelligent estimate could thus be formed by them of the fitness of certain means to effect results; failures would be less common, and bubble projects in manufactures less likely to be entertained in consequence. 'A little knowledge,' in this particular, is not 'a dangerous thing.' The more general cultivation of free hand and mechanical drawing in connexion with a knowledge of the various simple mechanic powers, and their

familiar applications, would be very important. Some idea given also as to the properties possessed by the various metals, &c., &c., would be invaluable, and would point out to the student or pupil their fitness or the reverse for certain purposes.

* * * * * * * * *

"The original intention of mechanics' institutes was to supply mechanics with instruction in the principles of mechanical philosophy, chemistry, and other sciences which bore, either directly or indirectly, on the callings in which they were engaged. Though such institutions have fallen short of the original intentions of their founders, there can be no valid reason why an attempt should not be made, or rather an attempt should be made, to convert them into what they were in the first instance intended to be, viz., industrial schools for artizans. Many such institutions have very excellent libraries; in some instances, collections of philosophical and chemical apparatus; others, such as those of Liverpool and Manchester, very excellent buildings, all of which appliances would seem to indicate that were a desire to support the proposed scheme of industrial education expressed by the members, their extension into permanently useful institutions might easily be secured.

"The establishment of a higher class of schools for those who are likely to have charge of manufacturing establishments is a question which admits of considerable difference of opinion; but for the purposes of supervision of a manufactory, a greater amount of knowledge is certainly needed than is necessary for a workman employed in executing a particular portion of the work. As this is, however, calculated to encourage class distinctions, it might be well to leave this particular of the scheme for further consideration, alike upon class and economical grounds.

"That aid should rather be given in the first instance than support, appears reasonable, and calculated to render the local institutions more independent. It will be well, however, to consider, before any permanent decision is come to, whether exceptions should not be made in favour of certain localities where an important manufacture is carried on, while the manufacturers are few in number and the people possessed of limited means; but where it is at the same time important that they should be in possession of correct information as to the principles, whether mechanical, chemical, or both, which regulate their particular trades. In the grand centres of manufacture, such as Manchester, Birmingham, Leeds, Bradford, Glasgow, &c., it is to be hoped that money support would not be desired; while the reduction in the cost of books, maps, models, diagrams, and apparatus would be advantageous in economising the funds and increasing the resources of the institution by the purchase of additional illustrations for lecturing purposes and of books for extending their libraries.

"Without a systematic and defined course of study it would be alike

absurd and impossible to carry out any course of industrial instruction. Uniformity of study in all districts is not advisable; that best fitted for the potters of Staffordshire is not that which would suit a Manchester weaver, cotton printer, or mechanist. Again, a specific course of instruction would be needed where the woollen manufactures of the country are cultivated to the greatest extent; while chemistry, metallurgy, &c., would more particularly make up the sum of the Birmingham artizan's studies. Thus, not on account that any kind of knowledge is valueless, but art is long and life is short, the necessities of life require, on the part of the working man, his attention to be directed to the particular branch of industry he is engaged in; the propriety, therefore, of subdivision and educating specially will, it is hoped, be understood.

"In a commercial and manufacturing country such as England, it is singular that in time past rewards have been conferred upon those who have been proficients in matters which do not, either directly or indirectly, operate upon the national industry. Successful students in endowed grammar schools obtain free exhibitions to the Universities. The talented young artist who is successful in the competition at the Royal Academy, is afforded assistance to increase his knowledge of his profession by visiting Italy, and in her galleries of sculpture and painting to study the excellences of the fathers in art. It is, therefore, to be desired, that in the new scheme of industrial education some system of rewards, in the form of prizes, exhibitions, or scholarships, shall be provided, which, while they will present themselves as incentives to the students, will be his passports to situations requiring a knowledge of science allied to industry. Medals or books might mark the lowest degree of excellence. A diploma, signed by the teacher or professor, recommending the student as being qualified to fill a particular situation, might distinguish the second; while the first or highest would be distinguished by gaining the privilege of attending for a given number of sessions the industrial college in the metropolis, where, with superior and more widely extended opportunities of study and observation, the abilities displayed by him at the provisional institution might receive their complete development of usefulness.

"For the completion of the scheme of industrial education, the writer is of opinion that there is no element more useful than that of museums, the exhibition in visible shape to the eyes of the visitors of the raw material; the machines required in the conversion of raw material into a useful object; the chemical agents also employed in the processes; the finished object, or the manufacture completed; with illustrations in which the ornamental form has been called in to assist in infusing the element of beauty. In the furtherance of these views it will be evident that, in the first instance, museums of a very extensive character, or their contents of a very varied kind, are not to be expected to arise out of the subscriptions raised for the support of such institutions. The writer would,

therefore, respectfully suggest on the present, as he has already done on a former occasion in a somewhat kindred subject, viz., that in their early stages such museums should be confined (so far as the money purchases are concerned) to those specimens of raw material, machinery, and manufactured products or articles as will be likely to aid and suggest, for the more perfect development of the manufactures of the peculiar locality wherein such museum is situated.

"The subject of technical industrial education is one of very great importance, and though, as I am willing to believe, we have gone on very well *without*, the question is, would we not be much better *with* it. When the conflict approaches it is well to be arrayed and armed for the fray; and most assuredly the union of intelligence and scientific knowledge in connexion with practice, the ability to *do*, with a thorough understanding of the *why* and *because*, is the best defence which we can be in possession of; the sure and only antidote and the true preservative against the industrial competition against which it is not improbable we may be called to do battle."

From Mons. Arnoux, chief designer to Messrs. Minton, Stoke-upon-Trent.

(TRANSLATION.)

"SIR,

"IT is not until to-day that I have had leisure to reply to your circular of the 31st of January, in order to lay before you my opinion on some of the points on which you ask for information.

"I have already had occasion to submit to two eminent individuals, specially connected with the Department of Practical Art, some observations upon the spread of artistic teaching among the labouring classes, and I shall pass by all that relates to that part of the subject, and confine myself specially to the means of diffusing scientific and industrial instruction among the people.

"If any rapid advance in the arts of design is for the present doubtful, at all events the same cannot be said of industrial instruction, to which the practical turn of mind and calculating character of the English appear to me to be peculiarly adapted; and whilst every one at the present day feels the necessity of it, we should rather seek to ascertain what may practically be done in the actual state of things, than try to upset what already exists.

"The subject divides itself into two completely distinct parts:—1st, the instructions to be given to workmen and artists (and this again may be divided into *general* and *technical*); 2nd, that to be given to young men who may hereafter become masters, such as manufacturers, engineers, &c.

"These two divisions must be kept distinct. The first should receive, in his own district, a free education of an essentially practical character;

the second, on the contrary, should, at his own expense, proceed to seek in London instruction both theoretical and practical—the only place where professors fitted to supply instruction of that kind can be got together. I will take these two divisions of the subject separately.

"In proposing to improve the technical instruction of the workman, I do not presume you to have had the idea of taking any of them away from the works of the factory to send them for instruction into a special school of art and trade. All observation shows that nothing is better for the workman than apprenticeship in the workshop under the paternal guidance of the master. He is there naturally led to perfect his processes, whilst he profits by the improvements of his companions. It will be sufficient, then, to aid his intelligence by giving him a knowledge of the resources which science places at his disposal. There are in France two special schools of art and trade for artizans; one at Chalons, and the other at Aix. These schools, up to the present time, have produced but doubtful results, for two reasons. The first is, that the professors of the different branches of trade relax in their energies, and after a certain time no longer keep pace with the improvements of the day. The second is, that the pupils thus kept two or three years away from the workshop lose their handicraft skill; and, simply because they have been brought up in a special school, they acquire a self-sufficiency and conceit which renders them extremely loth to return to their former position. A step in this direction only produces malcontents, and tends to swell the ranks of future chartists and socialists. On no account should a young man be taken from his workshop. If his mind be of a superior order, you may rely upon human nature for his becoming, whether artist or workman, a Rembrandt or a Jacquard, if, after his hours of labour, you can offer him in the evening the attraction of an institution where he can cultivate his mind and his taste. By providing such establishments as the *Conservatoire des Arts et Métiers* in Paris, you will attain your end.

"But you may say, 'We have a great number of mechanics' institutions open for workmen where they may instruct and improve themselves.' Allow me to say that, as they are at present constituted, they can scarcely do any good. Keep them as *moral assemblies*, useful for preventing young men from making a worse use of their time, but do not imagine that meetings where the subscribers are at all times left to themselves, without teachers to point out the good from the bad, where lectures are few, given in a desultory manner, sometimes on one subject and sometimes on another, by fourth-rate lecturers, can ever be of real benefit to the country.

"I know that institutions such as I should like to see formed are not possible in all districts; and I do not imagine it possible to establish more than five or six of them in all the great towns of England, for the simple reason, that you have not in reserve a sufficient number of pr

fessors fitted for giving such instruction ; but you can judge of this matter better than I. I would also add, that on the choice of professors will depend the *life or death* of your establishments, if they are not chosen with great impartiality, and if you do not, by liberal salaries, induce men of real merit to enter on a career of teaching. Everything will depend on this I am convinced that the great impediment to the development of the schools of design, on the system which you call 'self supporting,' has been the incapacity of the masters; not that I think them bad painters or bad designers, but because, for the most part, they are ignorant of good methods of instruction. Be assured that, with this object in view, it is not easy to find a professor who can explain *clearly* to young workmen such things as descriptive geometry, the laws of physics, or the elements of statics or dynamics, without using complicated algebraical formulæ, which they would not comprehend. When you find good professors build for them a *bridge of gold ;* for it is they who will form others to take charge of schools hereafter to be established in the provinces.

"Another principle in teaching should be the division of the courses, in order that each master may undertake to teach only that which he knows really well. For such courses as those on metal-casting, machine-making, glass-making, pottery, paper-staining, dyeing, &c., &c., it will be necessary to have recourse to instructed practical men who will undertake, in a fixed number of lectures, to treat of that art with which they are specially conversant.

"It is, then, only in London that you can hope in a short time to establish a college of arts and manufactures as complete as it ought to be. It is there you must make your first experiments ; and it is only after a time that you will be able to supply the provinces with similar institutions on the smallest scale. The experiment may be made in London with little difficulty. The necessity is urgent ; and there would be no need to wait for a building, because the courses might be given provisionally in existing lecture-rooms, so as to judge of the modes of teaching by the professors who offer themselves.

"Government must, without doubt, assist in the supplying these colleges with libraries and collections, which must be placed under the charge of the masters. If you reckon on private generosity for providing these colleges with necessary articles, you will fail. Such generosity is always limited ; but even if not limited, it is rarely exercised with sufficient discernment in the choice of objects. I am convinced that few persons know what is really necessary to place before the eyes of the pupils of any district, whether for schools of design or the future industrial schools. There can be no guarantee on this point, except in a committee chosen from enlightened persons, with sound judgment, who understand what the pupils ought to learn both by inspecting collections as well as by listening to the lectures of a professor.

"I have not quite made up my mind on the question of giving prizes. Excellent, no doubt, for stimulating artists, are they necessary in industrial classes? Pupils of these classes will not have time to put in practice any manual labour in the college. Perhaps it would be better to establish no regulation on this head, and to leave the youths, and even the men, to profit freely by the instruction which you supply. Do you not put a man of forty years old to the blush, if a youth of fifteen, with a more expanded mind, carries off the prize from him?

"As I cannot here enter upon any programme of courses, I conclude my general observations by recommending that industrial teaching should begin sufficiently low, because the greater part of the workmen or artists who will attend the courses in the colleges have scarcely had time to learn to read and write before entering the workshop, and will not be able in reality to take advantage of the benefits which you will introduce into elementary and other schools.

"I shall be very short in my remarks on what ought to be done in the way of industrial education for the higher class. According to my notion, it is only necessary to establish in London a central school like that which we have in Paris, assigned for training what we call 'civil engineers.' This school, altogether private, is due to an intelligent individual, who has got together the best professors, and has made them interested in its success. This establishment, which is very profitable to its founder, has indeed been a real blessing to France, for whom, in a period of twenty-four years, it has turned out 1,500 skilled subjects, who at the present time are to be found at the head of our most important manufactories, and who have contributed, in no small degree, of late years, to the progress of French industry.

"Such an institution, if founded, could only be for young men already prepared in other establishments. It is therefore necessary that, in these latter, instruction in science should be sufficiently attended to, in order that the pupil, on coming to the higher school, should at least know perfectly the first part of algebra, linear drawing, and descriptive geometry, and geometry properly so called. As I have little knowledge of what is taught in England in 'grammar schools' and others, I can say nothing on what should be done there."

From Mr. R. Atkinson, of Dublin, Poplin Manufacturer.

"With respect to the general tenor of the circular, I most heartily agree; and consider that, if the object can be carried out, it will be of paramount importance to the rising generation; but, as regards the first suggestion, viz., the introducing industrial instruction into our grammar schools, I think it would be advisable not to interfere with them, unless in a very elementary manner, as a knowledge of English literature is

necessary as a basis for a higher course of instruction; therefore, I would prefer having our mechanics' institutions made systematic instruction schools for artizans.

"With respect to the other suggestions, I think them most admirable; and, as a manufacturer of nearly *forty* years' standing, can bear testimony to the great advantage of having intelligent and skilled workmen—and, even if that were the only advantage, it would be great—but, now that other countries are applying their energies to further manufactures, and that every new application of an element is followed by its adaptation to manufactures, it is absolutely necessary that the youth of these countries should be educated in those industrial pursuits, so as not to be behind any other country, and also to be able to apprehend and apply the various discoveries made in science to manufacturing purposes."

From Mons. Bontemps, of Birmingham.

(TRANSLATION.)

"THE object of the Society of Arts is one of the grandest that can be proposed—namely, that of enlarging the measure of knowledge, principally among the industrial classes; and, therefore, men most eminent in art, in science, and in industry should be called upon to assist. Its business is to initiate young men in those branches of knowledge which an ordinary mind may grasp, and which fall within rank of application to their future business. It is indeed a work of difficulty. I consider that such minds as Herschel, Faraday, Brewster, De la Beche, and Wheatstone, would in no respect be degraded by co-operating in such a field. From such men the Society of Arts should seek books for these schools. Such men would render science plain and attractive. All the natural phenomena, the great physical and chemical laws, will become familiar to youths who will hereafter apply them. Let the Society of Arts, above all, take care to procure men of talent to write treatises on the applied sciences. There are a number of such treatises in France, many written by men of high reputation; but, I must say, they have generally failed, leading their readers astray by describing processes incomplete and often inaccurate, or which have long since ceased to be used.

"The Society of Arts should, in my opinion, even apply to eminent manufacturers for treatises on that branch of trade in which they are or may have been engaged. The more eminent the manufacturer the less will he fear publishing his secrets and his processes. In this age success does not depend upon secrets. Every manufacturer knows well what his rivals are doing. The real secret of business lies in enlightened management. I feel persuaded that the most worthy manufacturers will make no objection to writing treatises on their business, making known its history, its processes, its actual state, and, above all, the improvements of which it is capable. To this point we must turn the attention of the

young mind; it is there we shall find the elements of success and fortune of the future.

"But it is not sufficient to make the education of our youth scientific and industrial; we must form its taste, and develope its artistic powers. It is here the great difficulty of the problem lies. There is no want, in England, of learned men of the highest order; of manufacturers of the greatest skill; or workmen who second the efforts of the latter to solve the problem of that cheapness which renders the whole world dependent on its industry. But how shall we give an artistic impulse to their products? Where are the masters to give such instruction? Are they to be found among the architects, the painters, or the sculptors? What do the first produce? Buildings, it is true, which are not without some merit; but they are simply copies—recollections of the monuments of past ages. The painters produce pictures, whose high price sometimes is significant of their real value, but they care not to apply their art to manufactures. Sculptors seek inspiration from the antique—striving to realise the beauty of the human form; but never trouble themselves to design the outline for a vase, or any other article of domestic use. Where, then, are the teachers of youth to be sought? The French, more advanced in some points in this respect, have still great need to impress a more artistic movement on their education. I should say that teachers in the present day can only be found in the examples of former days, and of countries which, though inferior in many respects, are infinitely superior to us in an Art point of view. In short, we must take Art wherever we can find it. We must establish museums and models for the use of schools. There must be collected the beauties of Grecian art, the treasures of mediæval art, and particularly of the 13th century, which, in its religious works, affords us such sublime examples in point of conception, form, and colour. Nor must we forget the imaginative marvels of the Renaissance. But, in addition, and I particularly urge it, because it is less generally felt, let us not fail to collect the precious productions of the East, which are at the present time so superior to ours, particularly in the point of combination of colours. Let us study and improve those rich designs for carpets and shawls which we strive servilely to copy, and whose invention continually supplies us with new patterns. Let our young men try to turn to account those points in which the manufacturers of China so far surpass the imperial, royal, and other manufactures of Europe."

From Mr. W. Charley, linen-bleacher, of Belfast, Juror at the Exhibition of 1851.

"THE subject treated of in this interesting document is one deserving the most serious consideration, and I believe every enlightened individual in the kingdom will sympathise with the praiseworthy efforts of

your Society to advance the intellectual condition of the industrial classes.

"I, for one, have long felt the necessity of such a step in the linen manufactures of the North of Ireland, knowing, as I do, the frequent loss occasioned in many of its branches by the ignorance of the persons in charge. For instance, the *bleaching* of linen is a most difficult process, requiring the greatest care, knowledge, and experience; this important branch has until lately been under the control and superintendence of uneducated foremen, to whom the gentlemen employers generally left the entire management; many of these men were scarcely able to write their names, and were merely superior workmen. No wonder, then, the irregularity and uncertainty of the process became proverbial, and is in many parts to this day. I am happy to say that of late a decided improvement, in this respect, has taken place here, and that several firms (including my own) have succeeded in procuring scientific men to conduct this most difficult and important department of our staple manufacture. The result has been a higher style of textual appearance and durability, and increased despatch, combined with diminished expenses. This has all been effected by scientific knowledge being brought to bear on the question, with a judicious admixture of practical experience.

"The march of improvement still goes on; and, as far as I can judge, we are a long way in advance of those old countries to which our forefathers were originally indebted for the rudiments of the manufacture. Still, however, the number of really scientific men employed in the linen business is very limited, and among the labouring artizans there is much want of enlightenment; to increase the former in *number* and the latter in *knowledge* must, therefore, be most desirable: we have already several societies established for this purpose, such as, to some extent, the Royal Flax Improvement Society, and the Chemico-Agricultural Society of Ulster, &c. &c.

"But if these remarks apply to the linen manufacture, how much more forcibly will they do so to those engaged in the more mechanical arts, viz., to workmen and designers in wood, metal, and stone! On the perfection of their laboured delicacy of finish depend, in a great measure, the profits arising in business from improved machinery, and, indeed, much of our domestic comfort.

"Every one knows the great annoyance to which, through injudicious planning, our dwelling-houses sometimes expose us, such as intolerable draughts of cold air, impure gases caused by smoky chimneys, and imperfect ventilation. These difficulties will be more easily overcome, when the laws of nature are more generally understood.

"As I feel deeply interested in these subjects, I am afraid I have been led to enter at too great length into showing our deficiency, and our want of universally diffused scientific knowledge; for the present age

is no doubt distinguished by its immense strides in the direction of improvement in this respect, and its great advance on the last century. Much is, however, yet to be done: we are only comparatively beginning to subdue nature to our uses; and if Providence mercifully spares us from the calamities of war, and thus allows our talents peaceably to be developed, the next century will be as much superior to the present, as certainly the present is to the past.

"I think the Government schools of design, or perhaps, in this country, the new colleges, might be extended so as to include a department for industrial science *of the superior order*, for the instruction of *managers;* and that the mechanics' institutes of the various manufacturing towns could enlarge the principle, and carry out the details of conveying instruction to the labouring artizan."

From Mr. William Fairbairn, of Manchester, Juror at the Exhibitions of 1851 and 1855.

"THE objects contemplated by the Industrial Instruction Committee are of such vast importance to the industrial classes of the community, that I have had some hesitation as to what description of institution should be adopted, and what changes are necessary to be effected in our national institutions, to meet all the requirements essential to a sound and substantial industrial education. That a better and more efficient system of elementary instruction should be adopted does not admit of doubt; and the want of such a system is equally apparent to all those who have watched the progress of the mechanical and industrial arts since the introduction of the steam-engine and the Peace of 1815. From that period it is obvious that the unprecedented increase of manufactures, the numerous mechanical inventions, the introduction of steam navigation, and the crowning discoveries of the electric telegraph and locomotion by steam, are in themselves sufficient inducements to urge the necessity of that preliminary instruction anticipated by the Committee, and so much in demand by those who are the sinews of our national ascendency, and the true supporters of our national wealth.

"It must appear obvious, that our recent discoveries in physical and mechanical science, their practical application to the useful arts, and the equally important discoveries in chemical research, have changed not only the pursuits but the relations of mankind; and, in place of those national distinctions, want of intercourse and community of feeling, which in former days separated, and not unfrequently embroiled nations in hostile conflict, are now, by the practical exercise of those very discoveries, united as one, having the same pursuits and the same interests at stake. As a witness of these changes, and from a conviction of their importance in ameliorating the several relations and the intellectual advancement of the industrial classes, I feel, in common with others, the importance of

maintaining and perpetuating those valuable acquirements of enlarging our sphere of action by the introduction of a better system of education, and of giving to the working man the necessary facilities for the acquisition of knowledge.

" Under the impression that a liberal and sound principal of industrial education can be effected, permit me to draw the attention of the Committee to those classes of men whose vocations are of such importance to the public welfare and the public safety, as to require special attention in a moral as well as an intellectual point of view. I mean those classes which arrange themselves under the following heads:—

" 1st. Millwrights and constructive mechanics.

" 2nd. Engineers, marine and stationary.

" 3rd. Locomotive engine drivers, and their assistant stokers.

" Now all the above classes require the utmost attention; and in order to point out to the Committee wherein they are deficient, I apprehend they will pardon me if, in speaking from experience, I should notice defects and suggest remedies, which, in a national point of view, it may be desirable on the one side to avoid, and on the other to incorporate in the new system of education contemplated by the Committee.

" 1st. *Millwrights and constructive mechanics.*—Viewing the different classes of mechanics and artizans, as above enumerated, in their intellectual and social condition, it will be found that amongst those employed in the constructive arts, millwrights, taking them as a body, are probably more intelligent than most others. This arises from the nature of their employment, and the variety and form under which this description of machinery (namely millwork) is executed. The erection and construction of mills calls forth the dormant energies of the individuals employed at it, engenders reflection, quickens the intellect, and leads to the removal of difficulties with a facility that could not otherwise be accomplished.

" Here the division of labour is not so easily effected, as a good out foreman millwright must depend upon his own resources, and not only work himself but give directions to others in the execution of an important duty, which embodies all the multifarious operations of spinning, weaving, grinding, rolling, &c. In fact, a good millwright should be, to a certain extent, a 'jack of all trades.' He should be able to forge and turn; to work in wood, iron, and brass; to erect steam engines: and all this he should be able to accomplish, exclusive of his knowledge of machinery, in the arts of printing, dyeing, grinding, spinning, weaving, &c. All this he should also know, as well as a few leading principles in physics, and those branches of practical science which bear directly upon his professional avocations, and which render his services of great value, when employed at a distance beyond the reach of workshops, in the erection of machinery of such varied forms and uses.

"To this class of men, a sound preliminary education and a knowledge of the exact sciences would be invaluable.

"*Engineers, marine and stationary.*—These men are of such importance to the community as to require a separate notice. They are contemporaneous, and have sprung into existence with the steam-engine and steam navigation, and forty years ago there was scarcely a person to be found under the name or title of an operative engineer. The discoveries of Watt, the extension of the manufactures, and the introduction of steam navigation, established a new era in the history of mechanical science; and the introduction of railways and steam locomotion not only created demands for a profession before unknown, but it changed the relations of society, if it did not almost realise the fabulous tales of the Arabian Nights. With these mighty changes came a new class of mechanics and artizans. They entered upon their respective professions without knowledge and without experience, and their only school was the workshop, the engine room, and the 'stoke hole.' With such instructions and with such materials is it to be wondered at that blunders and accidents should frequently occur, and that the lives of the public should be left in the hands of men whose limited knowledge does not enable them to judge and reflect upon the responsibilities attached to their several duties?

"To such a class a school of physics and practical science, united to a correct system of moral culture, would be of incalculable benefit to themselves as well as the public.

"*Locomotive engine drivers and their assistant stokers.*—The locomotive engine drivers and stokers have only been known to us for the last twenty years, but they constitute at the present moment an important branch of the industrial community, and so far as their acquisition of knowledge and respectability of character is concerned, we are all, individuals as well as the public, deeply interested. Engine drivers and stokers above all others should have a regular and rigid course of training. They should have a keen eye and a clear perception, they should be taught care and attention to signals and every minutiæ connected with the rules and government of the lines on which they are employed, and, above all, they should be instructed in the management of the engine, the value of time, and the absolute necessity of working the distance according to the time table and those established rules by which they and the public are to be governed in their departure from, and arrival at, the different stations. A driver should also be acquainted with the principles upon which the steam in the boiler is generated, its elastic force, the security and free working of the safety valves; and, in fact, in order to prepare him for the public service, he should attain his degree and character in the Working Man's College before he was considered eligible to mount the foot-plate or to handle an engine. Lastly, other classes, such

as blacksmiths, carpenters, masons, bricklayers, turners, tilers, moulders, &c., exclusive of innumerable others, such as spinners, weavers, dyers, printers, &c., employed in the manufacture, might each of them reasonably demand to be included in a national system of industrial education. The Committee, in the exercise of their powers, will not however forget what is due to those important classes. In my opinion, the great and important object to be attained in the extension and establishment of educational institutions, is to engraft upon the mechanics' institutions elementary classes for industrial education; and in large manufacturing towns, where the pupils cannot be accommodated under one roof, that branches or district schools be established to meet the wants of the community. After the student has passed through his rudimentary instruction, he should be eligible to enter what I would designate the Industrial College, and should there receive instruction upon the exact sciences, and those branches of chemical research which would teach him first principles, and fit him for the exercise of his profession.

"I do not think any measure of enlargement, or the engrafting of industrial institutions on the existing endowed grammar schools, would answer the purpose. They appear to be founded for totally different objects, and, I much fear, could not amalgamate or be connected so as to work harmoniously with the industrial system. It is different with mechanics' institutes. They appear to me to be the legitimate establishments for such a course of scholastic instruction; and as nearly every village in the manufacturing districts has its mechanics' institute, an industrial school attached to each, under the cognizance and superintendence of a Commission, would become a valuable adjunct, and of immense importance to the advancement of the industrial arts.

"These schools, if established on a large scale, should, in my opinion, be as comprehensive as possible, and embrace every description of industrial culture, not exclusively for the mechanical and manufacturing arts, but for every branch of education connected with agriculture, the theory and practice of drawing, subsoiling, and all those principles of chemical and mechanical manipulation which bear upon the management and cultivation of the soil.

"It is not my province to point out to the Committee in what way and to what extent these schools should be carried into effect; suffice it to observe, that all pupils intended for managers, foremen, and leaders in different departments of the useful arts should, as soon as convenient after they have received the requisite preliminary instructions at the school, be transferred to the industrial college, in order, by a higher course of study, to prepare them for a faithful and correct discharge of their professional duties.

"In each of the large manufacturing towns such a college should be erected, endowed, and maintained by the State. It should have pro-

fessors and teachers in the different branches of the useful arts. It should contain workshops and a museum, and should be empowered to give distinctive badges or degrees as rewards of merit. Assuming these schools and institutions to be established, we might reasonably look forward to greatly-extended knowledge and a higher standard of character amongst the mechanics and artizans of the United Kingdom."

From Mr. Harry Green, Artist, of Stoke-upon-Trent.

"I BEG to acknowledge the receipt of your letter with much pleasure, as it affords me an opportunity of expressing the confidence I feel, as to the realisation of the happy results anticipated from the establishment of a universal system of industrial instruction in the *principles* of those arts and sciences in which we are daily becoming more deeply interested.

"Too much support, therefore, on the part of manufacturers and the public generally, cannot be given to the members of the Industrial Instruction Committee, and the Council of the Society of Arts, in their praiseworthy endeavours to accomplish so desirable a scheme.

"I regard the recent establishment of elementary drawing schools as one important step in the right direction; and independently of being instrumental in diffusing a correct taste, they will be highly beneficial in rendering more effective the labours of those who have the direction of our schools of design, and other schools of a similar character which may be hereafter established. Art, however, and the practical sciences, seem to be so inseparable in their relation to manufacture, that the successful development of industrial art, without a knowledge of the *elementary principles* of those sciences, on which its successful application to manufacture depends, seems to be an impossibility.

"I am of opinion, that the system of instruction adopted by the Department of Practical Art already contains many features applicable to the foundation of a very efficient system of industrial education; and that by an extension of the system, so as to provide facilities for imparting sound elementary instruction in the principles of the chemical and physical sciences, *simultaneously* with the elementary instruction in the principles of industrial art, much that is wanting may be supplied.

"With respect to the suggestions offered in your letter, as to the enlargement and improvement of some of our endowed grammar schools, and the conversion of the existing mechanics' institutions, where practicable, into industrial schools for artizans, I am of opinion that such arrangements would be very desirable, and would render them of greater value to the industrial community than they are now.

"The establishment of a class of schools in which the courses of instruction would be of a more extended character than those prescribed for the more strictly elementary schools would be especially desirable, as affording to artizans who have passed through the elementary courses

honourably, opportunities of qualifying themselves for pursuits of a high character, as foremen or superintendents of works, &c., or as teachers in the elementary schools.

"I also believe that *aid* would be necessary, in the first instance at least, as a means of carrying out the scheme, until the public shall have become so impressed with the value of the schools as to feel that they have a claim on its support. At the same time, I have little doubt that if a system of industrial education such as is contemplated by the Committee were introduced, it would be so highly appreciated by those for whose benefit it is intended, that many schools would soon become self-supporting.

"That the courses of study recommended should be as systematic and definite as possible I believe to be indispensable, both to avoid the unsatisfactory consequences of desultory study, and to prevent confusion in carrying out the plan.

"I am also of opinion that the provision of exhibitions or scholarships would be highly beneficial as a means of enabling advanced students from the elementary classes to attend the schools of a higher grade, and qualify themselves for pursuits requiring a higher degree of instruction than those of an ordinary workman, and that the award of prizes, in the shape of instruction books, instruments, &c., would be commendable both as a means of instruction and encouragement."

From the Rev. Thomas Jackson, D.D., Rector of Stoke Newington.

"THE important subject to which you have directed my attention is one in which I have felt deeply interested during many years.

"In order to understand it I have personally visited most of the schools of arts, commerce, and manufactures on the Continent, especially those of Lyons, Paris, Leipsic, and Brussels.

"I rejoice to perceive that the introduction of industrial pursuits into every course of elementary education cannot long be postponed; that the study of language as an instrument of mental training is not for the future to absorb all the time and attention of youth at school and college, but that some well-considered plans will be set on foot to make them acquainted with the products of our own and other nations, with the practical view of improving both the materials on which our manufacturing population is occupied, and the taste which they are now more than ever required to manifest in every department of industry.

"In the promotion of such plans I shall deem it a high honour and privilege to co-operate."

From the Minutes of the Board of Directors of the Liverpool Mechanics' Institution, 7th February 1853.

THE following resolutions were submitted by the Evening School Committee:—

"That the Committee have received with feelings of lively satisfaction the Circular from the Committee on Industrial Instruction of the Council of the Society of Arts, in reference to the improvement of the organization of mechanics' and other popular institutions, so that they may become efficient instruments for promoting a thorough and comprehensive system of industrial instruction, and that they are equally gratified by the assurance that great efforts may now be speedily looked for to provide such instruction on a national scale.

"That the primary object contemplated by the founders of the Liverpool Mechanics' Institution, in 1825, was to secure to artizans the means of acquiring a really sound and useful education, an education such as should not merely serve to improve their general culture, but to extend their knowledge and improve their taste in the direction most necessary to render them more skilful and more successful workmen, and that this is still recognised as the cardinal point to which the best efforts of the Board must always be directed.

"That, for the realisation of this purpose, lectures of a popular as well as of a more scientific character have been provided, classes to meet in the evening hours have been organized, a library containing about 16,000 volumes, a gallery of sculptures containing upwards of 350 specimens of ancient and modern art, a museum of objects of natural history, and a collection of philosophical apparatus, have been formed, while the establishment has been built and furnished at an expense exceeding 25,000*l*.

"That although the measures which have been adopted have doubtless been successful in a high degree in improving the state of general education among the great body of the people of Liverpool, no fewer than 15,000 individuals having been enrolled as pupils in the evening classes or as auditors at lectures, the Board have to regret that the more special object of the institution, namely, that of imparting to workmen a knowledge of the scientific principles upon which the exercise of their several callings depends, remains to a large extent still unaccomplished.

"That the opinion indicated by the Committee on Industrial Instruction on the subject of popular lectures is quite in accordance with that arrived at by the Board, who for the last two years have ceased to make any arrangement in this direction, on the ground of the comparative inutility of such lectures for the purpose of real instruction, being satisfied that knowledge of a really fundamental and practically valuable kind will always be most speedily and economically secured in classes systematically arranged and conducted so that every pupil be subject to repeated examinations to test the progress he has made. . . . . .

"That classes more advanced than any of those now in operation for instruction in the application of mathematical science to the constructive and mechanical arts, and on the principles of chemistry and its practical

application, have repeatedly been established with hopes of success, but that all such classes have, after a brief existence, uniformly failed, and always, as the Committee believe, from the same cause, namely, from the want of the requisite degree of previous training on the part of a very large proportion of the pupils who came forward, their consequent inability to appreciate the instruction offered, and from their attendance thus becoming, instead of an intelligent and interesting pursuit, a dull round of unmitigated drudgery.

"That this, in the opinion of the Committee, is the most formidable obstacle to be encountered in all attempts which may be made to instruct the artizans of our country, in a satisfactory manner, in the principles on which the practical arts are based; and by a knowledge of which alone it is possible adequately to improve in any department. That it was with the view of obviating this difficulty, that classes of a purely elementary kind were first established in the evening school; and it was for the same reason that day schools of an improved character were subsequently founded in connexion with the institution; but, notwithstanding everything which has been done through the immediate agency of this establishment, and everything which a steadily improving appreciation of the value of education has effected otherwise, this difficulty is still felt so severely, that only one year ago the Directors were obliged to abandon a class for special instruction in the application of the principles of mechanics to the constructive arts, solely upon this ground.

"That there is clearly no satisfactory remedy for this state of matters, excepting in a widely extended system of practical education for the great body of the people, and this, even in the most favourable circumstances, must necessarily be a work of considerable time. That, meanwhile, the Committee are of opinion that much may be effected towards inducing a better state of things, if Her Majesty's Government can be prevailed on to announce a well-digested curriculum of study for artizans, to recommend the same for adoption in all popular institutions, and to offer certificates, prizes, exhibitions, scholarships to pupils of the highest order of merit, on their completing certain prescribed portions of the said curriculum, whether the studies may have been pursued at school, at college, or in a mechanics' institution.

"That the Committee give their opinion as to the great value of a curriculum of study, prescribed by authority, which must be recognised as competent, all the more unhesitatingly, because of their experience of its importance within the last two years, in their efforts to improve the character of the drawing classes, and to consolidate them after the manner of the Government Schools of Design. That but for the fact that they had the authority and example of the Government Schools to refer to, the Committee are fully persuaded, from the strong repugnance exhibited by the great majority of the pupils to a course of study so much

more regular and severe than anything they had before seen or been accustomed to, that instead of being able to report now of the Art department as in a comparatively healthy and prosperous state, they would long before have been compelled to announce empty benches and closed doors.

"That the Committee believe, moreover, that besides cheap supplies of books, models, and other apparatus, as suggested in the Circular of the Industrial Instruction Committee, great benefit would be found to result from periodical inspection and examination of all schools professing to afford industrial instruction; and they would further suggest that all schools, such as that one over which they more immediately preside, would be materially aided in their efforts were the Inspectors to deliver a few lectures on the occasion of their visit, either with the view of illustrating the advantages resulting from particular courses of study, or communicating information as to the state of other countries, or of other districts in our own country, in regard to such education; and that here again the Committee would adduce, in support of their views, the excellent effect of Mr. Wornum's lectures on ornamental art, in conveying much valuable information, and infusing fresh life into the drawing classes.

"That the Committee desire to co-operate most heartily with the Committee on Industrial Instruction of the Society of Arts, and to profit, in the management of the Liverpool Mechanics' Institution, by any suggestion which they may offer. That the Committee consider the question of Industrial Instruction as the most important to which their attention can be directed, and will always be ready to make renewed exertions to secure to their fellow townsmen increased facilities for attaining such instruction as shall be, to the greatest attainable extent, commensurate with the requirements of the times in which they live; being satisfied that this is not only desirable as a means to a higher general culture, but that it is necessary, nay, indispensable, to enable the British artizan to sustain, with due credit and advantage, a competition which daily becomes more severe, with a better educated class of workmen on the continent of Europe."

The resolutions of the Evening School Committee were confirmed unanimously.

The following resolutions by the Day School Committee were then submitted:—

"The Committee have received with much satisfaction the Circular from the Industrial Instruction Committee of the Council of the Society of Arts, in reference to the state of education throughout the country; and are much gratified by the assurance that strenuous efforts may be confidently looked for, with the view of extending the courses of study pursued in the grammar and other endowed schools, and of introduc-

ing, on a large scale, improved systems of instruction for the middle classes. . . . . .

"That the Committee can imagine no measure by which the vital interests of the entire country may be more surely promoted than by a widely extended system of really practical instruction for youth; and while they will always consider it a high privilege to use their utmost efforts to ensure its speedy realisation, it must ever be with them a source of lively gratification to reflect that, besides the direct benefits conferred on numbers so large by the immediate agency of the day schools of the Liverpool Mechanics' Institution, their example has led, not only to the establishment of many other schools, both here and elsewhere, professing similar aims, but that it has served at once to raise the tone and improve the character of the education now offered over the entire north of England."

The resolutions of the Day School Committee were also confirmed unanimously.

From Mr. John Mercer, F.R.S., of Oakenshaw, Lancashire.

"The remarks of Edmund Potter in his 'Letter to one of the Commissioners,' however applicable they may be to design in the lower and medium styles for home and foreign consumption, are not equally applicable to the chemical state of the calico print trade.

"For the preservation and benefit of the British arts and manufactures, you conceive that the masters, managers, and skilled class of workmen of these arts ought to be better instructed in the rational and scientific principles involved in them. I think you are quite right; many great authorities have thought the same. Chaptal, on the phrase 'practice is better than science,' remarks, 'but when it is required to solve any problem, to explain any phenomenon, or to discover any error in the complicated details of an operation, the mere artizan is at the end of his knowledge, is totally at a loss, and would derive the greatest advantage from the existence of the man of science. The most experienced artist without science will often meet with the discouraging alternation of success and disappointment.'

"Perhaps there is no one can confirm the above remarks as regards calico printing more than myself.

"When I became connected with calico printing in 1818, the only two calico print works possessing much chemical knowledge were Thomson's of Clitheroe, and Hargreave's of Accrington. I had a little chemical knowledge; this being united with practice, gave us an advantage, and was attended with good fortune and success for many years.

"Many of the higher print houses and manufacturing chemists have, from time to time, supplied themselves with young men to superintend

the chemical and colouring department of their works, from the chemical schools of Scotland, a few from London, but most from abroad.

"America is in the same position. I have had an application some time, from a highly respectable print-house there, to find them a person possessing sufficient scientific and practical knowledge to manage their works, salary 400*l.* to 800*l.* per annum, with an excellent residence; but all such persons in this country are nearly indispensable in their present situations, and to tempt them away would be doing an injury to an English house to benefit one in America. I believe they are now looking to France for one.

"In many of the print, bleach, and chemical works in Lancashire, much deficiency in chemical knowledge exists; hence, there is much more bad and spoiled work than there would be if the scientific principles of the processes and colouring were well understood; although as regards good, practical men, no place exceeds Lancashire; but in such varied processes, from the grey piece to the finished print, consisting of from one to two *score* of operations, in either of which the goods may be spoiled, it often requires both the science and experience of the clearest to keep all right, detect the cause of error, and at once to set all correct again.

"The present chemical schools are not well adapted for the sons of print-masters, managers, or colourmen. In the two or three years they can spare for such study, they ought to be instructed in that branch of chemistry immediately applicable to their future labours; such as a good knowledge of the substances used in their art, colouring matters, acids, alkalies, earths, oxides, &c., chemical affinity, the action of heat, air, oxygen, chlorine, &c. These simple first principles will be as much as they can learn well in two or three years. When a young man, after returning to the works, finds that instead of having studied these first principles, which are everything to him, he has spent his time in studying the vegetable alkalies, ethyses, mythyses, &c., electricity, &c., &c., he brings both his chemistry and his chemical school into disrespect; what he has learnt being of no service in the arts of printing, &c.

"I do not understand abstract chemistry; many of the richest things in the arts will no doubt be brought from the discoveries in it; but the young man's time is limited; he must be instructed in such knowledge as he can apply at once, leaving to his future and higher progress the chances of discovering new applications.

"The majority of the managers and colourmen in the calico print trade being practical only, are jealous of, and offer such decided opposition to, the introduction of what they call 'chemical men,' that the master, who would have engaged them, considers it more prudent to give way than get into collision with the heads of his works, particularly as the applicant would have no chance for supplying their place for at least

a year or two. A strong case of this kind took place with a young man from one of the London schools; I tried for him, and he tried various places, but all failed, either from opposition of manager or colourman. This young man was, in my estimation, one as likely to succeed, either at a print or chemical works, as any I ever talked with; he saw his error in not having, before he applied, directed his attention to that kind of knowledge applicable to the art or situation he sought to fill; he might then have had more of the master's influence in his favour.

"The young men who would find no opposition to their entering into the works are the sons of masters, managers, and colourmen; but they have no suitable school where they can obtain the instruction required to fit them for their future labours.

"It appears the time is near at hand when something should be done for the rising generation, in a scientific way, more than the common country schools supply."

From Mr. H. L. Pattinson, of Newcastle-on-Tyne.

"I HAVE well considered the circular of the Society of Arts, dated 31st ult., and I very much approve of the whole of it.

"One's eyes cannot be shut to the fact, that almost all manufacturing processes now depend more on intelligence and skill, rather than on locality; and most branches are becoming so highly developed, that some, and in many cases much, scientific knowledge is required for their successful pursuit. The oldest and most important manufacture, that of food agriculture, cannot be carried on in future, profitably at least, without the aid of science; and certainly I hold with you, that the science should be placed within the reach of all. Every grammar school in the country should impart some rudiments of practical science.

"But except the matter is taken up by Government in a liberal and enlightened way, the thing will not be done."

APPENDIX Q.

LIST of BRITISH JURORS at the PARIS EXHIBITION, appointed by the BOARD OF TRADE, in pursuance of the RECOMMENDATIONS of HER MAJESTY'S COMMISSIONERS.

CLASS I. MINING AND METALLURGY.

JURORS.

W. J. HAMILTON, President of the Geological Society.

WARINGTON SMYTH, F.G.S., Professor of Mining and Mineralogy in the Government School of Mines, and Inspector of Mines to the Duchy of Cornwall.

CLASS II. FORESTRY, &c.

JUROR.

SIR W. HOOKER, F.R.S., Director of the Royal Gardens, Kew.

CLASS III. AGRICULTURE

JUROR.

J. EVELYN DENISON, M.P., Member of the Royal Agricultural Society of England.

CLASS III. AGRICULTURE, &c.—*continued.*

SUPPLEMENTARY JURORS.

JOHN WILSON, F.R.S.E., Professor of Agriculture in the University of Edingburgh.

C. E. AMOS, Consulting Engineer to the Royal Agricultural Society of England.

CLASS IV. MACHINERY IN GENERAL AS APPLIED TO INDUSTRY.

JUROR.

GEORGE RENNIE, C.E., F.R.S.

CLASS V. RAILWAY MACHINERY, COACHES, AND HARNESS.

JURORS.

T. R. CRAMPTON, C.E., Engineer to the Submarine Telegraph between France and England—for Railway Machinery.

Rt. Hon. LORD SHELBURNE, M.P.—for Coaches and Harness.

CLASS VI. MACHINERY FOR WORKSHOPS.

JUROR.

W. FAIRBAIRN, C.E., F.R.S., Corresponding Member of the French Institute, and Juror in 1851.

CLASS VII. MACHINERY FOR WOVEN FABRICS.

JUROR.

Rev. R. WILLIS, M.A., F.R.S., Professor of Natural Philosophy, Cambridge, and of Mechanics in the Government School of Mines, and Juror in 1851; aided by the Jurors for Woven Fabrics.

CLASS VIII. ARTS RELATING TO THE EXACT SCIENCES, AND TO INSTRUCTION.

JURORS.

SIR DAVID BREWSTER, F.R.S., Member of the French Institute, and Deputy-Chairman and Reporter of the Jury of Philosophical Instruments in 1851.

J. CARTER, Alderman of the City of London, and Chairman of the Metropolitan Committee of Watch and Clock-makers.

SUPPLEMENTARY JUROR.

DR. TYNDAL, F.R.S., Professor of Physics in the Royal Institution of Great Britain.

CLASS IX. HEAT, LIGHT, AND ELECTRICITY.

JURORS.

C. WHEATSTONE, F.R.S., Professor of Experimental Philosophy, King's College, Corresponding Member of the French Institute.

DR. NEIL ARNOTT, F.R.S.

CLASS X. CHEMICAL MANUFACTURES, INCLUDING PAPER.

JURORS.

THOMAS GRAHAM, F.R.S., Master of the Mint, Corresponding Member of the French Institute, and Deputy-Chairman and Reporter of the Chemical Jury in 1851.

WARREN DE LA RUE, F.R.S., Reporter and Juror in the Exhibition of 1851.

CLASS XI. ALIMENTARY SUBSTANCES.

JUROR.

R. OWEN, F.R.S., Corresponding Member of the French Institute, and Chairman of the Jury on Alimentary Substances in the Exhibition of 1851.

CLASS XII. HYGIENE, PHARMACY, SURGERY, MEDICINE.

JURORS.

SIR JOSEPH OLLIFFE, Physician to the British Embassy in Paris.

DR. ROYLE, F.R.S., President, Professor of Materia Medica in King's College, Scientific Referee to the H.E.I.C. on the Vegetable Substances of India, and Juror in 1851.

SUPPLEMENTARY JUROR.

EDWIN CHADWICK, C.B., late Member of the General Board of Health.

CLASS XIII. NAVAL AND MILITARY ARTS.

JURORS.

Lieutenant-General SIR JOHN BURGOYNE, BART., G.C.B., Inspector General of Fortifications, and Juror in 1851.

J. SCOTT RUSSELL, F.R.S., Shipbuilder, late Secretary to the Royal Commission for the Exhibition of 1851.

CLASS XIV. CIVIL ENGINEERING.

JUROR.

J. LOCKE, C.E., M.P.

SUPPLEMENTARY JUROR.

CHARLES MANBY, C.E., Secretary to the Institution of Civil Engineers.

CLASS XV. STEEL AND ITS PRODUCTS.

JUROR.

T. MOULSON, the Master Cutler of Sheffield.

SUPPLEMENTARY JUROR.

J. J. MECHI, F.S.A., Juror in the Exhibition of 1851.

CLASS XVI. GENERAL METAL WORK.

JURORS.

W. BIRD, Deputy-Chairman of Jury on Iron in the Exhibition of 1851.

ALFRED TAYLOR, F.G.S.

CLASS XVII. GOLDSMITHS' WORK, JEWELLERY, AND BRONZES.

JUROR.

The Most Noble the MARQUIS OF HERTFORD, K.G.

CLASS XVIII. GLASS AND POTTERY.

JURORS.

J. HARTLEY, Manufacturer of Glass in Sunderland, and Medallist in 1851.
J. WEBB, Juror for Furniture in 1851.

SUPPLEMENTARY JUROR.

DR. HOFMANN, F.R.S., Professor of Chemistry to the Government School of Mines, and Juror and Reporter in the Exhibition of 1851.

CLASS XIX. COTTON PRINTING AND DYEING.

JURORS.

T. BAZLEY, President of the Chamber of Commerce, Manchester, one of Her Majesty's Commissioners for the Exhibition of 1851.
WALTER CRUM, F.R.S., Calico Printer and Bleacher, Glasgow.

CLASS XX. WOOLLEN AND WORSTED MANUFACTURES.

JURORS.

S. ADDINGTON, Woollen Merchant, London, and Reporter of the Jury on Woollen Cloths in the Exhibition of 1851.
RICHARD S. BUTTERFIELD, Merchant, of Bradford, Yorkshire.

CLASS XXI. SILK.

JUROR.

T. F. GIBSON, one of Her Majesty's Commissioners for the Exhibition of 1851.

SUPPLEMENTARY JUROR.

T. WINKWORTH, Reporter to the Silk Jury in the Exhibition of 1851.

CLASS XXII. FLAX AND HEMP.

JUROR.

ERSKINE BEVERIDGE, Linen Manufacturer, Dunfermline.

SUPPLEMENTARY JUROR.

JAMES MACADAM, jun., Secretary of the Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland, and Honorary Secretary to the Belfast Committee for the French Exhibition.

CLASS XXIII. HOSIERY, CARPETS, &c.

JURORS.

W. FELKIN, Chairman of Jury on Clothing in 1851.
PETER GRAHAM, Upholsterer, and Juror in 1851.

CLASS XXIV. FURNITURE AND DECORATION.

JURORS.

His Grace the DUKE OF HAMILTON.
M. DIGBY WYATT, Architect, Secretary to the Executive Committee of the Exhibition of 1851.

CLASS XXV. MISCELLANEOUS AND ORNAMENTAL OBJECTS.

Right Hon. LORD ASHBURTON, F.R.S., President, Deputy-Chairman of Jury on Furniture in the Exhibition of 1851.

CLASS XXVI. PRINTING, PHOTOGRAPHY, &c.

JUROR.

CHARLES KNIGHT, Publisher.

SUPPLEMENTARY JUROR.

THOMAS DE LA RUE, Chairman of the Metropolitan Committee of Paper Makers and Stationers for the Paris Exhibition, and Juror in 1851.

CLASS XXVII. MUSIC.

JUROR.

Right Hon. SIR GEORGE CLERK, Bart., F.R.S., President of the Royal Academy of Music.

CLASS XXVIII. PAINTING, ENGRAVING, AND LITHOGRAPHY.

JURORS.

LORD ELCHO, M.P.
DANIEL MACLISE, ESQ., R.A.
FREDERICK TAYLER, ESQ.
J. H. ROBINSON, ESQ., Engraver.

CLASS XXIX. SCULPTURE.

JURORS.

Right Hon. H. LABOUCHERE, M.P.
R. WESTMACOTT, ESQ., R.A.
W. CALDER MARSHALL, ESQ., R.A.

CLASS XXX. ARCHITECTURE.

JURORS.

SIR CHARLES BARRY, R.A.
PROFESSOR COCKERELL, R.A.

APPENDIX R.

EXTRACTS from the REPORT on INDUSTRIAL INSTRUCTION in ENGLAND made to the BELGIAN GOVERNMENT in 1853 by MONS. DE COCQUIEL.

"IF the personal qualities of the English are taken duly into account, it will be found that, in reality, that country is not, in an industrial point

of view, more advanced than certain nations of the Continent. Our establishments are, beyond any doubt, managed with more order and in a more skilful manner than the manufactories of England; our mines are worked with greater economy and more in conformity with the laws of science than those of that country. 'Whenever—and that implies in almost every manufacture'—a learned Englishman, a member of the executive of the Great Exhibition, said recently before *the Society of Arts*,* 'Science or Art was invoked as an element of progress, we saw, as an inevitable law, that the nation which most cultivated them was in the ascendant. Our manufacturers were justly astonished at seeing most of the foreign countries rapidly approaching, and sometimes excelling, us in manufactures, our own by hereditary and traditional right.' But England enjoys the advantage of considerable experience; she has enormous capital at command, and possesses a vigorous population, gifted with powers of production superior to those of the populations of Europe generally.

"That for which England may claim an undeniable superiority is her commercial skill. For that kind of business or transactions whose object is to know at every moment the state of production and consumption in the various markets of the world, she possesses an aptitude peculiarly her own. Whether through her native superiority, or in consequence of the advantages conferred upon her by her insular position, she has been enabled to command the greater share of the general commerce. This, I am firmly convinced, is one of the first causes, the fundamental one, of her manufacturing superiority. It is because she has better understood commerce than other nations, that she has seen her labour prosper, and develope itself in her manufactures; and that the latter, by a constant increase of production, have attained a degree of improvement unknown elsewhere. It is because England has been endowed, in the highest degree, with the genius for this special branch of commercial barter, that she has been enabled to realize in her relations with other nations, fairly enough it must be admitted, enormous profits, which she could devote, in the shape of capital, to the improvement and advancement of her home manufacture.

"It is, therefore, in some respects, owing to circumstances foreign to manufacturing skill, that English manufactures have obtained the immense superiority which they now enjoy. It would, therefore, in my opinion, be very illogical to draw any conclusion whatsoever against the advantages to be derived from industrial instruction, from the fact that England, the greatest manufacturing power in the world, is nevertheless deprived of its advantages.

"It must, moreover, be admitted that if England does not possess an

* Dr. Lyon Playfair. *Vide* "Lectures on the Results of the Great Exhibition." Lecture IV., Vol. I. *London: Bogue.*

organized system of industrial instruction, the professional education in that country results, to a certain extent, from the direction which is given to the general education. The latter is eminently practical, and is not, to the same degree as in our country, of that vague and ideal character which leads the mind towards the speculative, and diverts it from the real. In England the sciences offer themselves under aspects leading their votaries towards the practical; popularising and facilitating its development. It is not solely for the cultivation of the mind that general instruction is given, but still more with the aim of preparing men to render themselves useful to their country and to themselves, by the practical exercise of their faculties. To this particular direction imparted to general education, the English add resources which are exceedingly valuable, the use of which is precious, and the action incessant. Their country is inundated with small tracts and treatises, bringing instruction within the reach of the meanest capacities; and all these cheap publications, which popularise the generalities of science, place at the command of the people instruction which enables them to apply to works of utility the improvements realised in the higher regions of the scientific world.

"The want of a system of industrial instruction organized upon an extensive scale, and calculated to be complemental to the many resources which the country possesses to develop its production, is not the less generally felt in England by all the men whose ideas weigh in the balance of public opinion. The manufacturing classes are fully alive to the necessity which has become manifest of organizing a complete system of industrial instruction. The Exhibition of 1851 has aroused the national feeling, and given the impetus to this movement, which is daily gathering strength. This Exhibition itself sprung from the idea which is the groundwork of professional instruction. Its object is to guide by the light of science, to render more intelligent, more skilful, and more productive the labour of man, which is the source of his enjoyments and his welfare, by means of which he feeds, lodges, and clothes himself, which shelters him from the catastrophes of nature, which preserves his health, and lengthens his life. The Universal Exhibition was a great school in which every nation came to seek, from the example of others, the means of improving its own labour, its own industry, and the British people have themselves been extensively benefited by the improvements which their rivals have brought to the work of production. The idea which originated the Great Exhibition, is now fructifying and developing itself in the United Kingdom, and will certainly eventually expand to a magnificent system of industrial instruction, which, I have no doubt, will ere long serve as a model to all the nations of the Continent. Assuredly this would be a great and noble task for the nation, which, for the last quarter of a century, has given the signal of all the great reforms demanded by civilization.

"In Belgium, as well as in England, the constantly growing necessity of organizing industrial instruction has been recognized by an intelligent and enlightend government. On the eve of entering upon this great work of amelioration, it has appeared to eminent men of our country, that it would be useful to have a detailed knowledge of the institutions which England already possesses, of the results they have exerted upon industry, as well as of the new efforts which are now being made in that country in the same direction.

* * * * * * * *

"British industry has developed itself, owing to natural causes which I have explained, without the concurrence of an organized system of industrial instruction. For of all the institutions which now exist in England, some, established for a length of time, have either swerved from the true principles, or have only been very limited in their action; others, recently established, have as yet exerted no visible influence upon industry. In Belgium, where we possess no natural resources comparable to those of the United Kingdom, we could not with impunity disregard the necessity of industrial instruction, which must stand us in need to compensate for our less favourable position. The Great Exhibition having revealed to the eyes of the British people the inferiority of English workmanship in everything relating to the scientific portion of production, there has been formed, on the other side of the Channel, a regular league for the establishment of industrial instruction, and ere long Parliament by a favourable solution will be seen to crown the efforts of the enlightened men who have devoted themselves to this cause.

"The English Government, in favouring this movement, will only remain true to the programme of measures of popular improvement which for several years seem to have been the object of their most anxious solicitude. Cheap living, and the elevation of the industrial classes, has been the avowed banner of the most distinguished statemen of England.

"To attain this object, the important point is to increase the productive power of society.

"There are divers ways of fostering production, but one of the most efficacious and direct is education. Modern societies are based on a principle but little suspected by those which preceded them, viz., that every individual receives in proportion to what he gives. To render the language of science more intelligible, society may be represented as a huge mercantile establishment, in which each has his debtor and creditor account. The essential requisite for the well-being of society becomes here manifest: *Every one must be placed in a condition to give more in order that more may be rendered to him.* The husbandman, who sends to market heavy and plentiful corn, the capitalist, whom science has

taught to discover a mine, and to work it with skill and economy, he who supplies society with a graceful and commodious piece of furniture, a tasteful design, profound scientific knowledge, practised and intelligent muscular power, &c., will be entitled to a larger share of the general production than the husbandman who can only send light and scanty corn; than the capitalist, a portion of whose capital is squandered in futile experiments; than he who supplies society with an ungraceful piece of furniture, unfitted for the purpose for which it was intended, a design discordant in form and colour, false and empirical knowledge, rude and untutored muscular power, &c.

"Regarded in this point of view, industrial instruction bids fair to be the mainspring of the improvement of mankind. We live in an age in which the mechanism of production has been perfected to a marvellous degree. From the simplest tool to the powerful vehicles which bound through space with miraculous velocity, every kind of machinery has been renovated over the surface of the globe, by the inspiration of science. Credit places capital more bountifully at the command of the workers. Laws and manners favour labour. Whilst everything thus changes to his advantage around the producer, he should himself be improved. Whilst all the instruments of production are being perfected, it is necessary that the foremost of all these instruments—man—should become more skilful.

"Industrial education, therefore, naturally presents itself as likely to be in our time an object of attentive solicitude. The men of every class who have to enlist beneath the banner of production, should ardently aid its development; and it is the duty of governments to second their efforts, if not to forestall them. To regard the question, however, in another point of view, worthy in the highest degree of the serious attention of statesmen, it may be said that the tendency of civilization is to constitute skill the only element of superiority in production.

"Let me explain my meaning:—

"England at present sends back to America, spun and woven, the cotton which she receives from her in the shape of a raw material; America, on the other hand, sends back to England, in the shape of certain implements, the steel which in turn she receives from her in the shape of a raw material. How does this happen? It is evidently a question of skill; and because in both instances a superior degree of skill in the manufacture compensates for the dearness of the raw material and the expenses of freight.

"According as science progresses, skill occupies a higher rank in production. Time was when local advantages were decisive of the fate of a branch of industry and of the prosperity of a population. The country which had numerous watercourses was called the land of manufacture; that which was favoured with the finest climate had the

palm for agriculture; that which possessed certain raw materials was naturally marked out to sell them in the shape of complete products, and to enrich itself by that commerce without having to dread competition. When steam and machinery made their appearance in the world, manufactures had no longer a birthplace; when agricultural science became improved, the countries in which the sun seems to hide itself were seen to produce a vegetation finer than that of the lands most favoured by nature; when steam was applied to the locomotion of man and of goods by land and by sea, the proximity of the raw material was no longer anything than an advantage which the skill of a rival nation can easily neutralise.

"Every day the social improvements tend more and more to equalise the conditions of production between nations, so as to leave intelligence and skill only subsisting as instruments of superiority. It is owing to this superiority that England is enabled to send back to America, in the shape of woven fabrics, the cotton which she has received from that country, notwithstanding the advantages possessed by America of cheaper raw material and equally cheap fuel. It is owing to the same cause that America, which, in the clearing of her venerable forests, has acquired greater skill than any other nation in the manufacture of the spade, the axe, and the hatchet, is enabled to send back these tools to England, whence she derived the raw material of which they are made, and that cheaper and better than the English could manufacture them themselves.

"The statesmen of England have thoroughly well understood the question in this respect; the Exhibition of 1851 was to them a gleam of light which they will not fail to turn to profitable account. But this is an additional reason why other nations should gird on their arms and prepare for the conflict, that they may not lose the ground they have so laboriously gained.

"Unfortunately, our system of education in Belgium has scarcely prepared us to gather laurels in this glorious affray. The general education given in our country, as in the majority of the other countries of Europe, noways fits us to play a useful part in society. The general instruction in preparing young men for every career, qualifies them for none. Hence that crowd of applicants for government situations. If we had a well organized special system of instruction, we should likewise not see so many young men, for want of better occupations, aspire to the diploma of advocate or doctor, too frequently without rendering real services to society, frittering away talents which might be rendered available in other directions.

"Assuredly, if greater facilities were afforded to young men of acquiring practical knowledge in manufacturing, commercial, and agricultural industry, the number of candidates for government appointments would speedily be found to diminish considerably. The system of education

which prevails in the greater number of the European states, not only does not prepare men to enter upon the industrial career, but actually tends to divert them from it. Nobody can doubt that the tendency of the classical studies, such as they are generally constituted, inspires young men with a kind of disdain for the industrial professions. This is an evil, a deplorable one, eminently opposed to the general spirit of the age. Beyond the walls of the educational establishments and the colleges, industry is held in high esteem; it is placed on a level with all situations, and in the great states foremost in the march of civilization it has, on more than one occasion, proved the steppingstone to the highest public functions. Inside the colleges, the industrial professions are, indeed, regarded much in the same light as by Cicero, when he termed them *sordidæ artes*.

"However this may be, the English seem now thoroughly resolved to enter upon a more rational course; they have decided that the surplus funds of the Great Exhibition shall be devoted to the establishment of a system of industrial instruction. At the present moment a scheme for its organization is in the hands of the illustrious prince who has so powerfully contributed to the great gathering of 1851. I have no immediate knowledge of the details of this plan, but according to information which I have been able to obtain, the following would appear to be its leading features:— In all the important towns of the United Kingdom schools are to be established, in which the working men will be enabled to obtain, during their apprenticeship, a knowledge of the sciences which are in direct relation to their trades. There is further to be established, in connexion with the schools, a central institution, to be liberally aided by the Government. The working men who have finished their apprenticeship are to be admitted, after examination, into the industrial college, and are there to pursue a regular course of theoretical and practical study. On leaving this school, certificates are to be given to those who shall pass the required examinations in a satisfactory manner."

APPENDIX S.

Report by Consul-General Ward on the Bavarian Educational Institutions for Practical Science and Art.

My Lord, Leipzig, October 18, 1854.

In obedience to that part of your Lordship's instructions of the 15th of August last, which directed my attention to any institutions at Munich, or the neighbouring towns, for the promotion of Science and Art, I have the honour to submit to your Lordship some account of the schools and other educational institutions, whereby the people of

Bavaria are trained for a career in trade or agriculture, in the polytechnic arts, the fine arts, and the higher branches of exact science.

Artistic celebrity of Munich.

1. Munich is deservedly celebrated for the magnificent public buildings which have been erected in it, the remains of ancient art which it contains, the achievements in modern art, in sculpture, castings, pictures, and frescoes, which have been accomplished in it, and the many similar works which are still going on there. The genius of King Louis has converted the formerly dull and uninteresting Bavarian capital into a repository and school of the fine arts. In reviving the classical spirit of the ancients, King Louis has also known how to call into existence another form of art,—the religious-romantic,—which characterises the productions of the first masters of the day, and is so much in harmony with the genius and feelings of the nineteenth century. Munich has in consequence become a place of resort for artists of all nations, and is visited by the lovers of the beautiful from all parts of the world. Without dwelling, however, upon what is so universally known, or attempting any description of the galleries and artistic collections, whose contents have been detailed over and over again in printed books, my present object is more especially to advert to the fact that the late King of Bavaria has not only raised a city which will remain a monument of his energy and taste,* but has done much more by laying the foundation of a good system of national education for the industrial classes of the people. I shall endeavour to explain this system with as much conciseness as a due notice of the various institutions comprised in it will admit of.

System of technical education in Bavaria.

2. The technical branch of the Bavarian educational system dates from the year 1833, when it was regularly organized in a progressive series of institutions, from the schools of trade and agriculture to the polytechnic and the technical high school. The popular instruction in the elementary German schools had a direction given to it corresponding with that of the trade schools, and by this and the formation of drawing schools for the people, an opportunity was afforded to pupils of the most limited means to lay the groundwork for that artistic ability which is generally so valuable in the mechanical and manufacturing career. For such as might be unable to attend the trade or the polytechnic schools, separate schools were opened on Sundays and holidays, where they might acquire much useful knowledge, and extra lectures were appointed to be given in the trade schools for the benefit of apprentices and others who were not regular pupils. In this way technical information has been very widely diffused among the people, and the youth of the middle classes have been furnished with the means of attaining excellence, either in the fine arts or the exact sciences, or in those branches of knowledge which are the most necessary to trade and manufactures.

* The population of Munich was 40,638 in the year 1812; in 1853 it had risen to 128,803, including the suburbs and the garrison.

Principles of the system.

3. By an ordinance of King Louis, dated the 16th of February, 1833, the new educational plan (which does not interfere with the gymnasia or the course of classical and purely scientific study previously established) was authoritatively introduced. It is therein declared that neither the polytechnic nor the trade schools were intended to be in themselves schools of art, but were designed to carry art into trade and manufactures, and to raise the latter to the point which the progress of technical skill and the necessary competition with foreign industry required. The basis of a good technical education was first to be laid in the elementary schools, where the rudiments only of linear and ornamental drawing were to be taught, and the instruction in useful objects was to be adapted to the future wants of farmers and tradesmen, and to be made preparatory to the lectures to be given in the schools of agriculture and trade. The first step, as well as the foundation of technical instruction, would be the schools of trade (Gewerbe-Schulen). The instruction to be given in these schools was to begin with arithmetic, simple geometrical drawing, and the doctrine of the circle, simple ornamental sketches, and the rudiments of natural history, and was to conclude with architectonic drawing, free sketching by hand, exercises in the style of business and in book-keeping, and, when required by the line of pursuit, the necessary knowledge of chemistry. These, as well as the proper lessons in languages, geography, and history, were to be divided into a three years' course of study.

The schools of trade were not promised any direct allowance from the State, but were to be supported by various means, such as the revenue of the former town schools, voluntary contributions, moderate payments by the scholars, certain foundation and charity funds, and subscriptions of the parishes. In each circle of the kingdom a trade school of the circle (Kreisgewerbschule) would be established at the principal town, which school would receive 5,000 florins out of the funds of the circle.

Every trade school of the circle was to have an agricultural master to teach farming, in so far as the same should not be included in the instruction imparted in common to the commercial and agricultural classes. The establishments of any good master manufacturers and any farms in the neighbourhood were to be made available, so that the pupils might see the practical application of what they learned.

The superior trade instruction, viz., that of the polytechnic school, would begin with the higher branches of drawing (architectonic, geometric, and perspective drawing, mathematics, descriptive geometry, experimental physics, and the rudiments of civil architecture, and it would conclude with mechanical and architectural drawing, the doctrine of machinery, and mathematics, technical chemistry, and, if suitable to the destination of the pupil, embossing and modelling, also the leading

principles of the arts of road, canal, and bridge making. Here, also, the studies would be distributed over a three years' course.

The polytechnic schools would be established at Munich, Nuremberg, and Augsburg. The sum of 27,000 florins,* inserted for the purpose in the State budget, would be divided amongst them. It was enjoined that each of these three schools, as well as the respective schools of trade, should principally cultivate those branches of knowledge for which its locality appeared most favourable; that, consequently, the Munich school should devote itself to building, and objects connected with the artistic; that at Nuremberg casting and metallic manufactures should be chiefly attended to; and at Augsburg, the woollen and cotton manufactures, weaving, and dyeing.

The highest grade of instruction for the technical pupil would be found in the so-called technical high school, composed of the professors of the Cameralistic faculty, and those of chemistry, mathematics, physics, &c., in the university, and so concentrated as to form an institution in itself. But those students who might choose a purely artistic career might proceed at once to the Academy of the Fine Arts, and complete their education in art as pupils of that institution.

Such were the principles established by the enlightened King of Bavaria for the instruction of the great mass of his subjects in the real or practical branches of knowledge. For classical education (*literæ humaniores*), institutions already existed, nearly similar to those in other German States; viz., the Elementary Latin Schools; the Gymnasia for Greek, Latin, &c.; the Lycæa, or higher Gymnasia; and the University, as the high school of learning and pure science. These institutions were not interfered with by the new technical system; the intention was to separate the two great paths of knowledge, but that they should both be followed at the same time by their respective classes of students, the one *pari passu* with the other.

4. Regulations in detail, for carrying out the principles thus laid down by the King, were issued by the Minister of the Interior on the 4th of April, 1836. They are arranged under seven heads, and are stated to have been drawn up after previous communication with all those persons most conversant with education and practical science. Regulations for carrying out the system.

Under the *First Head*, technical instruction is declared to comprise all those branches of instruction whose bases and object fall properly within the sphere of the exact sciences. The branches are four, viz.:—

The qualifying for a purely artistic career.

The qualifying for the public service, in the department of works, roads, bridges, mines, salterns, and forests.

The qualifying for the professions of civil engineer, machine-builder, &c.; and,

* One florin is equal to about 2*s.* sterling.

The qualifying for the ordinary callings of citizens, such as manufacturing, productive trades, building, and the improvement of the soil.

Technical education stands between the purely scientific and the merely popular. Its groundwork is laid in the Latin and the German elementary schools, which all children are by law obliged to attend; if Catholics from the age of six to twelve, and if Protestants from the age of six to thirteen years. Here the instruction in drawing and in other objects of useful knowledge begins. When the first period is over, the separation takes place, and the youth proceeds either to the classical Gymnasium, or to the school of trade and agriculture; but if he does not become a pupil of either of these institutions, he is obliged to attend the Sunday and holiday schools; if a Catholic for courses of four years, and if a Protestant for courses of two years and a half. The schools of trade and agriculture are thus the technical, as opposed to the classical, Gymnasia; they are continued in the polytechnic schools, or technical Lycæa, which correspond with the classical Lycæa: and culminate in the technical high school, which also answers to the scientific high school in the University of Munich. There is to be no contest between the principle of *humanism* and that of *realism*, but an harmonious development of each principle distinctly on separate lines. Either system is well calculated to awake the intelligence of the pupil, and to stimulate his faculties in the destined direction, whilst each inculcates moral duties and religious sentiments in an equal degree.

Secondly. Drawing is required to be taught in the Latin, as well as in the elementary German schools, gratuitously, that is to say, simple geometrical figures, circles, and lines, and simple sketches and copies. In the elementary schools, not merely language and grammar, but the rudiments of arithmetic, geography, and history, are included in the course.

Thirdly. The objects of the schools of trade and agriculture, in which the technical branch of education begins, are reiterated, as well as the sources from which these schools are to be maintained. The funds transferred from the old town schools amount to 23,017 florins per annum. The technical instruction, properly so called, is to embrace the whole range of trade, manufactures, and produce of the soil, geometry, and algebra, as far as equations of the second degree, drawing, embossing and modelling, mechanics, natural history, the rudiments of chemistry, and book-keeping. For the agricultural pupils the course is varied according to their requirements. Provision is also made for regular instruction in religion, history, geography, and the German language, of which the last three are taught to such technical pupils as come from the Latin school, in common with the pupils of the Gymnasium, and to the rest of the technical pupils in the Sunday and holiday schools.

Under the *Fourth Head* are explained the objects of the Sunday and holiday, agricultural and mechanics' schools, which are distinct from the schools of trade last mentioned. They are adapted to such young farmers and trading apprentices as may not be able to attend the daily schools. The instruction is given gratis, and comprises the rudiments of linear and ornamental drawing, and of geometry, embossing and modelling, popular physics, chemistry, and machinery, and agriculture. This technical instruction is given during hours not occupied by the so-called real objects, viz., religion, history, geography, and the German language, which are also regularly taught in the Sunday and holiday schools, as already mentioned.

Fifthly. The polytechnic schools, or Technical Lycæa, are described as embracing the higher technical sphere, whilst the schools of trade and agriculture occupied the lower, and were, in so far, preparatory. The course is three years. Besides the three Government establishments at Munich, Nuremberg, and Augsburg, other towns are allowed to form polytechnic schools of their own, subject to the conditions prescribed, but this liberty has not been availed of. The objects of instruction are,—drawing; mathematics, pure and applied; descriptive geometry; experimental physics; technical chemistry; architecture; road, canal, and bridge-making; embossing and modelling; the history of trade, and the outlines of political economy. Pupils are admitted at the age of fifteen, if they have gone through either the trade school or the Gymnasium. From natives no payment is required; foreigners are to pay only 12 florins per annum. Pupils who take only a limited portion of the general instruction are also admitted, under the name of "Hospitanten," on payment of 6 florins for each course of lectures they attend.

Sixthly. The Academy of the Fine Arts is enumerated as holding an important place among the technical institution of Bavaria. It receives pupils who have passed through the proper stages of the polytechnic school in order to complete their education in any of the branches of pure art or in architecture.

Lastly, under the *Seventh Head,* the technical high school in the University is declared to be the keystone of the system of technical education, and the highest point to which it can be carried. It is additionally valuable as a school for the formation of teachers, and as a resort for the candidates for Government employment in the technical branch.

The high school is concentrated in the political economy or Cameralistic faculty of the University of Munich, and forms a complete institution in itself. It comprises the following professorial chairs:—two of forest science, one of the higher mechanics, two for mechanical and chemical technology, one for agriculture, one for pharmacy, one for political economy, one for mining, and one for the science of police.

Besides these, students have the benefit of the co-operation of professors of the philosophical and juridical faculties, as regards physics, mathematics, law, metaphysics, and other objects not belonging to the faculty of political economy.

All students who have passed regularly through the Gymnasia and Lycæa, have a right of admission to the technical high school; and the pupils of the Royal Academy, candidates in forest science, mining, pharmacy, &c., and pupils who have gone through the schools of trade and agriculture of the first class, and have acquired the so-called real objects from a Gymnasial teacher, have a similar right. It follows that pupils of the polytechnic school may hear lectures contemporaneously in the high school; but for those who do not take that course, or become students of the Royal Academy, the polytechnic school forms the culminating point of their education, and, indeed, is intended to complete the entire course of technical, combined with popular, instruction. The length of the studies in the high school varies from two to three years, according to the future destination of the student.

Having thus noticed the principles upon which these educational institutions were founded, and the substance of the regulations applicable to them, I proceed to state the condition in which they appeared to be at the time of my visit.

Munich school of trade and agriculture.

5. The school of trade and agriculture for the circle of Upper Bavaria is established at Munich, in a commodious building in the Damenstiftgasse, under the same roof as the polytechnic school. The rector is Dr. Joseph Bauer, with whom thirteen other masters are associated for the various branches of instruction. At the commencement of the last school-year, on the 29th of October 1853, there were 359 scholars; at its close in August 1854 there were 297. The instruction was distributed into three annual courses, in which the objects taught respectively were as follows:—

First Course.

Religion, two hours in the week; which is taught separately to the Catholic, and to the Protestant, scholars, by teachers of their respective confessions.

Geography and history, two hours in the week.

The German language, five hours in the week

The French language, four hours in the week.

Arithmetic, four hours in the week.

Zoology, four hours in the week.

Drawing, eight hours in the week; viz., the elements of ornamental drawing, and linear drawing with instruments.

SECOND COURSE.

Religion, two hours in the week; taught separately to Catholics and Protestants.

Geography, two hours in the week.

The German language and book-keeping, three hours in the week.

The French language, two hours in the week.

Geometry, four hours in the week.

Algebra, two hours in the week.

Physics, elementary, three hours in the week.

Botany, two hours in the week.

Chemistry, two hours in the week.

Technology, or the theory of machinery, two hours in the week.

Theoretical agriculture, two hours in the week.

Drawing, ornamental and linear, six hours in the week.

Embossing in clay and wax, four hours in the week.

THIRD COURSE.

Religion, two hours in the week; taught separately to Catholics and Protestants.

Geography, two hours in the week.

Exercises in German style, two hours in the week.

The French language, two hours in the week.

Algebra, three hours in the week.

Descriptive geometry, three hours in the week.

Stereometry and trigonometry, three hours in the week.

Mechanics, two hours in the week.

Mineralogy, one hour in the week.

Chemistry, with experiments, three hours in the week.

The doctrine of trades and manufactures, two hours in the week; comprising sugar, brewing, distilling, baking, glass, porcelain, and metallic manufactures, &c.

Theoretic agriculture, two hours in the week.

Drawing, ornamental and linear, nine hours in the week.

Embossing, four hours in the week.

The age of admission to this school is twelve years, and the majority of the scholars range between the ages of twelve and sixteen years. They are chiefly the sons of tradespeople, inferior officials, and others of the middle ranks in society. The great majority are of the Catholic confession. Prizes are annually distributed to the scholars as the rewards of exertion. This school has, I understood, the advantage of occasional access to the collections of machinery and other apparatus belonging to the polytechnic school. The school was considered as

flourishing, the numbers having increased. In the school-year 1852-1853 the number of pupils admitted was 339, of whom 280 were remaining at the close of that year.

Munich polytechnic school.

6. The Royal Polytechnic School at Munich is also commodiously established in the Damenstiftgasse. It is under the direction of the rector, Dr. H. Alexander, assisted by fourteen other professors, a teacher of English, and two subordinate assistants in mathematics and the chemical laboratory. The number of scholars at the opening of the last school-year, on the 3d of November 1853, was 304, of which 163 were regular pupils, and 141 were guests (Hospitanten); and of these 248 came from Bavaria, 40 from other parts of Germany, 11 from Switzerland, 3 from France, 1 from Russia, and 1 from Moldavia.

The number of the regular scholars has increased from 154 in the previous year (1852-53) to 163; while the number of the guests (Hospitanten) has fallen from 174 to 141.

The admission takes place on having attained the age of fifteen, and having passed through a trade school or Gymnasium. The instruction is distributed over a period of three years, and is divided into three ordinary annual courses, and a special course of engineering. The objects taught were the following:—

First Course.

Mathematics; viz., trigonometry, analytical geometry, &c.

Physics; viz., gravity, light, heat, electricity, &c.

Machinery, and the drawing of machinery, in which a large collection of models is made useful.

Positional drawing.

Descriptive geometry.

Ornamental drawing, in the antique and other styles, and after models.

Religion for the Catholics, in the first and second courses. The like, separately, for the Protestants, in the same courses.

Second Course.

Analytical mechanics; viz., statics and dynamics of solid bodies.

Machinery, and the drawing of it, with the use of the collection belonging to the establishment.

Chemistry, pure and applied.

Differential and integral calculus.

Positional drawing.

The doctrine of construction in building, and that of building materials.

Electro-magnetism, and the telegraph (in the course of 1852-53).

THIRD COURSE.

Applied mechanics; geodesy, viz., the use of measuring-instruments, surveying, and mapping.

Machinery, and the drawing of it, with the use of the collection in the establishment.

Analytical chemistry.

Composition in the art of building.

COURSE OF ENGINEERING.

The knowlege of construction in general, and applied specially to bridges, roads, railways, canals, and watercourses.

Construction and designing.

The theory of stone-cutting.

Practical geometry.

Drawing of sections of stones, walls, &c., and modelling of the same in plaster.

Architecture, after the antique.

The range of instruction thus given is, as will have been perceived, extensive, and fully sufficient to qualify all for technical professions, whose object is not to proceed further into scientific theory. The polytechnic students are from the middle ranks of society, and their ages generally between sixteen and twenty-one, though some few are older. Of the whole number of students in the last year, two-thirds were Catholics. Of the poorer students, small stipends are given for their support to the most meritorious; there are forty-six of these stipends, paid partly out of Government funds, and partly out of the revenues of the Circles. The school itself is, as already mentioned, also entirely maintained by the State. It possesses a large and valuable collection of machinery and models, a physical cabinet, a chemical laboratory, a library, and all the requisite materials of instruction. Excursions are made by the pupils, with the professor, for the purpose of the practical examination of objects. I was informed in different quarters that this institution stands in very good repute, and that it owes a great deal to its able and enlightened head, Dr. Alexander.

Nuremberg technical institutions.

7. At Nuremberg—the second city in Bavaria in respect of its population* and industrial importance—the technical institutions are similar to those of the capital, and embrace all the requisite instruction from the first elements to the period of admission to an university. In the school-year which closed in the month of August last, the number of pupils in these institutions was as follows:—

* 53,638 in the year 1852.

I. The Circle, Agriculture, and Trade School.

Agricultural Division.

	Scholars.
The Agricultural School of the Circle - -	55
The Branch Farming School - - -	6
The Preparatory School - - - -	28

Trade Division.

The Trade School of the Circle - - -	195
Guests (Hospitanten) - - - -	9
The Elementary Drawing School - - -	287
The Sunday Mechanics' School - -	1,287

II. The Polytechnic School.

Regular Pupils - - - -	64
Guests (Hospitanten) - - - -	20
Total - - -	1,951

The agriculture and trade school of the Circle is under the direction of Dr. Henry Rose, whose acquaintance I had the satisfaction of making. In the agricultural division there are eight masters and assistants; in the trade division, fourteen; in the elementary drawing school, two; and in the Sunday school, eleven.

Agricultural schools.

The agricultural school of the Circle is intended to prepare young men for managers or farmers, or to be their own economists as proprietors, or for an institution of a higher kind, or the central school of farriery at Munich. There are three courses of instruction, each of the length of one year.

The first course comprises religion (separately to Catholics and Protestants), arithmetic, the theory and the encyclopædia of farming, natural history, drawing, the German language, geography, calligraphy, and the practice of farming on the estates of Lichtenhof and Gibizenhof.

The second course comprises religion, the German language, arithmetic, theoretical farming, and the farming encyclopædia, physics, natural history, drawing, and practical farming on the estates.

The third course comprises religion, theoretical agriculture, agricultural chemistry, farriery, animal anatomy, arithmetic, and geometry, the German language, drawing, singing, and practical farming on the estates.

The pupils are from the middle classes, and their ages vary from fourteen to nineteen and twenty years.

In the branch farming school the instruction is rather less wide in its range, and the preparatory school is, as its name imports, designed to give preliminary instruction to such as are not yet qualified to enter the school itself. The usual age of the pupils is from twelve to sixteen years.

The total number of agricultural pupils, viz., 89, was four less than in the previous year. The pupils of the Catholic confession were 45, and those of the Protestant 44 in number.

Trade school.

The trade school of the Circle provides instruction up to a certain point in mathematics, physics, drawing, and modelling, for youth destined either for business or the service of the State. It has three courses of a year each.

The first course comprises religion (separately to Catholics and Protestants), arithmetic, natural history, drawing, the German language, geography, and French.

The second course comprises religion, mathematics, physics, chemistry, technology, drawing, the German language, history, geography, French, and modelling.

The third course comprises religion, mathematics, descriptive geometry, mechanics, chemistry, mineralogy, drawing, the German language, history, French, and modelling.

The pupils are from the middle classes, and range generally between the ages of twelve and seventeen years, the age of admission being twelve The majority are Protestants. The number of pupils has increased from 188 in the year 1852–53 to 204 in the year 1853–54.

Elementary drawing schools.

The elementary drawing schools impart instruction in drawing and modelling to boys who are pupils of the elementary German schools, which is intended to be afterwards followed up in the Sunday mechanics' schools. The Nuremberg school has 287 pupils, which is 14 more than in the previous year.

Sunday schools.

In the Sunday and holiday mechanics' schools, apprentices and others already employed in trade, and consequently unable to attend any daily school, are taught drawing, modelling, embossing, and engraving, as well as arithmetic, geometry, physics, and chemistry. These schools are very well attended, and are generally considered to have had an excellent effect. The number of pupils in the Nuremberg district has increased from 942 in the year 1852–53 to 1,247 in the school-year 1853–54.

Polytechnic school.

The polytechnic school at Nuremberg is under the direction of the rector, Dr. T. M. Romig, assisted by the other professors, and three subordinate assistants. The entire course of instruction is for three years, and the objects taught in the three annual courses respectively correspond very nearly to those taught in the polytechnic school at Munich, and detailed under that head. The conditions of admittance are also the same. A practical course in the mechanic workshop of the institution is also given, and some articles of machinery are actually made by the pupils. There is also a separate practical course for forming figures in sand, casting, and chiselling, in which the pupils have at present the benefit of Professor Burgschmiet's superintendence. The pupils are generally from the middle classes, and range between the ages

of sixteen and twenty-one. Of the whole nnmber, viz., 84, 67 were Protestants and 17 Catholics. The number of pupils in 1853-4 was greater, by seven regular scholars and two guests, than in the previous year. The school possesses a collection of mechanical apparatus in its workshops, and a physical and chemical laboratory.

Augsburg technical institutions.

8. The city of Augsburg* has long been known for its banking and monetary operations, and it has also manufactures of some importance. Its institutions for technical education are similar in their plan and arrangements to those of Nuremberg. They consist of—

	Scholars in 1852–53.	Scholars in 1853–54.
The Mechanics' Sunday and Holiday Schools -	978	939
The Circle Trade School - - - -	230	252
The Polytechnic School - - - -	95	79
Number, including Guests or Hospitanten -	1,303	1,270

From which it appears that the school of trade has increased, while the other two institutions have somewhat fallen off in the last school-year.

Sunday schools.

On every Sunday and holiday instruction is given in the mechanics' schools, for two hours in the forenoon, in mechanics, physics, chemistry, and geometry; in mercantile accounts and book-keeping; in linear drawing, and free drawing by hand. In the first three, experiments are used; and in general care is taken to ascertain by questions that the pupils remember what has been taught them. In the afternoon, one hour's religious instruction (separately to Catholics and to Protestants) is given to those scholars whom their attendance in the mechanics' school may have prevented from receiving such instruction in their respective parishes. Afterwards, there are two hours' instruction in linear and ornamental hand-drawing, and in embossing. The scholars are either occupied in trade and handicraft, so as to be unable to attend a daily school, or are daily pupils of the elementary German or Latin schools. The Sunday schools are considered to be working well, and to be highly valuable as laying the foundation of the future technical career.

Trade school.

The trade school of the Circle had 238 regular pupils and 14 guests (Hospitanten). The admission is at twelve, and the ages range from twelve to sixteen and eighteen. The payment is only 4 florins, or 8*s.* yearly. There are thirteen regular masters. The scholars are from the middle ranks of society, and the majority are Protestants. Several of them are Jews, who receive separate religious instruction from their own Rabbi. The objects of instruction being the same as in the schools of trade at Munich and Nuremberg, it is unnecessary to reiterate them. Of the three courses, the first is divided into three sections, on account of the great number of scholars inscribed in it.

* Population in 1852, 39,340.

The polytechnic school at Augsburg is directed by the rector, Dr. Leo, assisted by seven other professors. Its intention is announced to be the formation of technical artists and mechanics for a professional career or the service of the State. The conditions of admittance, as well as the objects of instruction, distributed over three annual courses, are the same as at Munich; and there is a course of practical instruction in the workshops, where models and some articles of machinery are actually made. The school is provided with all requisite apparatus, and with a chemical laboratory. Polytechnic school.

Several pupils came from foreign countries. The majority of the pupils are Protestants. Five stipends were granted last year to poor pupils, of the value together of 220 florins, which were paid from the funds of the Circle. During the winter months instruction was also given to twenty-five working mechanics in drawing, arithmetic, and geometry, by the professors of the polytechnic school.

The distinction in the objects of the three Bavarian polytechnic schools originally recommended by the Royal founder, viz., architecture at Munich, metallic manufactures at Nuremberg, and textile manufactures at Augsburg, has not been very strictly adhered to in practice; at least, there is no difficulty in obtaining adequate instruction in any of these branches in any one of the schools in question.

9. I have already observed that the polytechnic institutions form the culminating point of combined technical and popular education. But those who desire to proceed further in exact science or in art may direct their course either to the technical high school or the Royal Academy. The former has been described to consist in that faculty in the University of Munich which is devoted to Cameralistic studies, or political economy, with the collateral aid of certain professors belonging to other faculties. In this high school the technical or agricultural student or artist may graduate, if he wishes it, in the same way as the student who has gone through the regular course of *literæ humaniores* in the Gymnasia may graduate in any faculty of the University—in pure science, philology, theology, medicine, or jurisprudence. The Cameralistic faculty gives the degree to the technical student, which stamps him as fully conversant with the theory as well as the practice of those branches of science upon which his career of future usefulness is in any way dependent. The Munich technical high school.

The University of Munich is also an institution which owes chiefly to King Louis its present reputation and flourishing condition. It was removed in 1828 from the provincial town of Landshut to the Bavarian capital, and lodged in a spacious and even magnificent building, where 60 professors, ordinary and extraordinary, deliver their lectures to about 1,700 students. The University library has 160,000 volumes. Every branch of science is taught, except Protestant theology, which is confined to the smaller University of Erlangen. Catholic theology, on the The University.

other hand, occupies a prominent place, and a seminary for the peculiar training of priests stands in immediate connexion with this university.

The Gymnasia. In Bavaria the foundation of a classical education is laid in the so-called Latin schools, to which boys are admitted at the age of eight years, and where they are taught the rudiments of Latin in common with other elementary subjects. At the age of about twelve the boy proceeds to the Gymnasium, where he follows a regular course of classics, mathematics, history, &c., upon a fixed system laid down by the Government, which differs little from that adopted in Prussia and the other German States. When the youth has gone through the Gymnasium (the higher stages of which are sometimes called the Lycæum),* he passes to the University, and matriculates there upon the certificate of qualification which he brings from the Gymnasium, making choice of the faculty in which his studies are to be completed, and his degree ultimately obtained. There are in Munich three Gymnasia—the Wilhelminum, the Maximilianum, and the Ludwigs-Gymnasium, which is under the direction of the Benedictine monks. The instruction is divided into four classes. It is left optional to the scholar either to learn the modern languages or not. In the case of Protestant scholars, who in Munich are very few, religion and history are taught them by masters of the Protestant confession. The same provision holds good for Catholic scholars in the Protestant parts of the country.

Academy of Sciences, &c. The Academy of Sciences, originally founded by the Elector Maximilian the Third, has also been reconstituted by King Louis, and placed in immediate connexion with the University; many of the professors being likewise members of the Academy. The sittings are occasionally public; but the proceedings, not being of a popular character, are best known through the transactions which are regularly published. The actual president is the learned De Thiersch. There are various scientific collections, the property of the State, which are always available for purposes of study, such as the physical and optical instruments, the cabinet of natural history and petrefactions, the herbarium, the geological specimens, the chemical laboratory, &c. Each of these collections is under the care of a conservator appointed by the Crown. The chemical laboratory is now under the care of the eminent Professor, Baron de Liebig.

Royal Library. The new Royal Library, built by King Louis, is generally known for the large and valuable collection of books (about 800,000 volumes) and of manuscripts that it contains, the excellence of its arrangements, and the liberality with which books are placed at the disposition of the public.

Academy of the Fine Arts. 10. For the youth who has determined to embrace the career of an artist, the Royal Academy of the Fine Arts offers the requisite means of

* Philosophical instruction ought properly to begin in the Lycæum. In Bavaria there are several Lycæa, but in the north of Germany they scarcely exist as separate institutions.

completing his education. This institution has its origin in the drawing school founded by the Elector Maximilian the Third, and re-established by King Maximilian the First, on the 13th May 1808; but its present flourishing condition is the work of King Louis, who gave it a new constitution on the 14th of August 1846. It is at once a society of artists and a school of art.

The instruction given in the academy is both practical and theoretical. The former embraces historical painting, sculpture, architecture, and copper-engraving; the latter, the history of art, anatomy, perspective, descriptive geometry, and shading. The common basis of artistical studies is considered to be drawing after the antique; but especial attention is also directed to the drawing, modelling, and painting after nature. The instruction in historical painting is given in four separate schools, each under the direction of a distinct professor. There are also separate schools of sculpture, architecture, and engraving. Lectures are delivered regularly on the history of art, ancient and Christian, as well as on anatomy, and on the other branches of theoretical knowledge.

The admission to the academy is free both to natives and foreigners, provided they are qualified by the possession of adequate elementary knowledge and facility in the higher branches of drawing, with a proper scholastic education, and a good moral character. The pupils destined for architecture must, if natives, have passed through the polytechnic school; and if foreigners, produce certificates of their mathematical attainments. The candidates execute an experimental performance, upon the result of which their admission depends; and they must further remain a half-year on probation before they are definitively enrolled as pupils. The maximum period of study in the academy is six years; but pupils may leave it earlier if qualified. Diligent and talented pupils, who are natives of Bavaria and poor, may obtain small stipends, besides being furnished gratuitously with models for the cartoons, pictures, or statues which they may execute within the academy.

A general exhibition of modern works of art takes place about every three years, under the direction of the academy. One of these exhibitions was going on when I was at Munich, in a beautiful building in the Corinthian style, facing the Glyptothek. The academy has also the execution, or direction of all public works within the sphere of painting or sculpture. It forms a kind of council to the King in all matters of art.

The staff of the academy consists of a director (at present the celebrated William de Kaulbach), five professors, respectively, of painting, sculpture, architecture, engraving, the history of art, and the technics of painting, with teachers of anatomy and of perspective, descriptive geometry, and shading, and a corrector of the pupils' performances. It has a secretary, an inspector, and proper attendants.

The present number of pupils of the academy is 200, among whom are several foreigners. The expenses of the academy itself for the current year amount, in the whole, to 22,816 florins, or 2,281*l.* sterling—a very moderate sum, considering the efficiency of the institution and the merits of the professors. The budget of the academy, however, in the Government estimates is made to comprise the annual charge of the public galleries, &c., and stands thus for 1854 :—

	Florins.
1. The Academy of the Fine Arts - -	22,816
2. Galleries of Art, the property of the State (viz., the Glyptothek, Pinnacothek, New Pinnacothek, &c.) - - -	20,501
3. Working artists - - - -	1,800
4. Allowances and pensions to artists - -	6,721
5. Cashier's department - - -	550
6. General Reserve Fund - - -	357
	52,745

Equivalent to about 5,274*l.*

Professor Schotthauer, who was acting in the absence of the director, had the goodness to conduct me through the various departments of the academy, and into the studios of the professors, where unfinished works were going on. He pointed out a large collection of plaster-casts belonging to the academy; comprising not only the common antiques, but many scarce ones: the Elgin statues and reliefs from the Parthenon; the Colossus on Monte Cavallo in Rome; the Neapolitan Mercury, &c.; also Ghiberti's doors of the baptistery at Florence; the tapestries with the Vatican paintings of Raphael; and other objects with which the royal munificence has enriched the institution.

Society for improvement of manufactures.

11. In the organization of all the establishments above mentioned the hand of the Government is visible, and they stand immediately under its control. But there are other institutions in Munich which the inhabitants themselves have formed for the furtherance of the same objects; such as the Art Union, the Trades' Union, and the like. The Society for the Improvement of Manufactures has, in particular, had a very useful tendency, by the constant communications which it keeps up between the class of artists and that of mechanics. It was founded in 1850, and the chairman is the eminent architect De Voit. The society gives to its members drawings and models for all articles to be worked or manufactured in the department of industry; arranges occasional exhibitions; and publishes a journal. Whilst the artist furnishes the drawings or designs, the artizan is often able to give useful suggestions with respect to the materials best suited for the work; and so both the one and the other is mutually improved. The progress which has been made in

casting, and other branches of metallic work—of which the late Munich Industrial Exhibition has furnished evidence—is considered as in some measure attributable to this society, which aims at raising the character of manufactures, by bringing them more closely into contact with the fine arts.

12. The number of artists constantly residing in Munich is very large, and was stated to me at about 800. They are chiefly Germans, but artists from foreign countries are also continually visiting the Bavarian capital. The daily association of these persons with each other could not fail to be attended with beneficial results. Not only is the principle of emulation called into action, but ideas are exchanged in a social intercourse which often lead to the realization of important works. Munich offers, in this respect, on a small scale, the same advantages that Rome does on a larger. Nor are the artists by any means confined to their own set. They mix pretty freely with other classes of society—with learned men, tradesmen, mechanics, and artizans; and hence their tendency has become more scientific than formerly: they have become more disposed to avail themselves of practical science in the execution of artistic works. This improvement may be partly attributable to the influence of the polytechnic school; but I have often heard the opinion expressed, that still more is owing to the favourable social circumstances in which the artist is placed when residing at Munich. Artists resident in Munich.

As a school of pure art, there is no place out of Italy which holds out so many attractions to the student. He finds in the Glyptothek, the Pinnacothek, and the other Royal collections, the best opportunities of copying from the antique, and of forming his knowledge of the painting and sculpture of more modern times. He sees around him magnificent public buildings, and churches whose architecture is only surpassed by the beauty of their internal decorations. The statues of Schwanthaler show him that great sculptors can also be produced in our own age; and the frescoes of Cornelius, of Hess, of Schnorr, and of Kaulbach, reveal to him a new form of art not possessed by the ancients, which the genius of Catholic Christianity alone could conceive and accomplish. The new German school of painting is essentially Catholic. It is peculiarly at home in Munich, where everything breathes the Catholic spirit, and where in consequence there is that perfect harmony between religion and art, which in Protestant countries must always be so difficult (if indeed it is possible) to realize. These great advantages the Bavarian capital affords to the artist in the prosecution of his career. And if he is successful, and gives evidence of more than ordinary talent, he may feel sure of the Royal patronage being liberally extended to him. King Louis's example descends in this respect to his successor, and the future Sovereigns of Bavaria will have before them an easy task. They will have little to create; they have only to pursue the road which King

Louis's genius has thrown open. The undertaking was a laborious and a very costly one; for it is estimated that the late King expended upon buildings and works of art in Munich (including the Glyptothek Collection, which he formed when Crown Prince, and the Walhalla Temple on the Danube), at least 130,000,000 florins, or 13,000,000*l.* sterling. The Bavarians have at times complained that the Royal profusion pressed hard upon them; but they now readily acknowledge the splendid result, and are proud of the widely-spread fame of their most artistic city.

Conclusion.

13. In conclusion,—recapitulating the causes which have chiefly promoted the progress of Practical Science and of the Fine Arts in Bavaria, they appear to be as follows:—

1. The laying an early foundation, by beginning to teach drawing and other branches of useful knowledge, in the elementary German as well as in the Latin schools.
2. The excellent system of the Sunday and holiday schools, where drawing and other useful objects are taught to apprentices and others, who cannot attend any daily school.
3. The graduated and systematic plan on which the education begun in the elementary schools is carried on in a continued chain through the schools of trade and agriculture, to the polytechnic, and the technical high school in the university.
4. The extraordinary advantages which Munich offers to students in art, not only by admitting them to the Academy, but by placing them in the midst of the finest artistic works, and enabling them to associate constantly with artists, and with scientific and practical men.
5. The absolute direction and control exercised by the Government over all educational institutions, from the lowest to the highest, and whether in the department of literature, pure science, practical science, or fine art. Neither the clergy nor corporate bodies have the right, more than any individual, to meddle with the public education; but it is the business of the Government to conduct it in conformity with the physical and moral wants of the people, and whilst furnishing them with the means of making their own career in life, to take care that they are properly imbued with religious and moral sentiments, and with a right sense of their duties as subjects and members of society.

I have, &c

J. WARD.

The Earl of Clarendon,
&c., &c., &c.

PLAN, ELE

TRANSVERSE SECTION

END ELEVATION

APPENDIX T.

CORRESPONDENCE between HER MAJESTY'S COMMISSIONERS and HER MAJESTY'S GOVERNMENT on the Subject of the ERECTION of a MUSEUM on the KENSINGTON GORE ESTATE.

I.

HER MAJESTY'S COMMISSIONERS to the CHANCELLOR OF THE EXCHEQUER.

SIR, Palace of Westminster, June 30, 1855.

I AM directed by Her Majesty's Commissioners for the Exhibition of 1851 to acquaint you, that since the date of the presentation of their Second Report to Her Majesty in November 1852, they have continued to devote their attention to the best means of executing the important duties graciously intrusted to them by Her Majesty, in respect both of the preparation of the site purchased at Kensington Gore for the reception of institutions connected with Science and the Arts, and the promotion of their general scheme itself.

Inasmuch, however, as it will be their duty at no distant date to submit to Her Majesty their Third Report, in which will be fully detailed the satisfactory progress which has been made in both respects since the date of their former report, Her Majesty's Commissioners do not propose on the present occasion to do more than bring under your notice a subject of a more urgent nature immediately connected with the general question, to which their attention has been especially called in the course of their inquiries. They allude to the inconvenience at present sustained in consequence of the want of means of publicly exhibiting, and even of providing adequate stowage room for many important existing collections connected with Science and the Arts, that are either the property of the State, or in respect of which the public has a more or less direct interest; and in proceeding to specify particular instances of the evil in question, they trust that Her Majesty's Government may be willing to take forthwith the necessary steps for the purpose of providing, at any rate, a partial remedy for it.

Premising that it is their desire to abstain from entering upon the wide field which the subject embraces, further than is brought under their own immediate cognizance in the discharge of their duties, Her Majesty's Commissioners would, in the first place, recal to your recollection that a highly interesting and valuable exhibition, in connexion with the purposes of education, was held in the summer of last year, under the auspices of the Society of Arts, in St. Martin's Hall, London. The importance of

rendering, if possible, this educational exhibition of more than a merely temporary utility, and of making it the groundwork of a similar permanent exhibition in the interests of national education, was brought under the notice of Her Majesty's Government by the Council of the Society; and that body, with the concurrence of the Lords of the Treasury, took the necessary steps to induce the various exhibitors to contribute the articles exhibited by them, in order to form the nucleus of a permanent educational museum.

The reasons advanced by the society in favour of the establishment of such a museum, and to which their Lordships returned an entirely favourable reply, will be found set forth in the enclosed memorandum.—(Enclosure A.)

The appeal made to the different exhibitors proved very successful, and a considerable number of articles were presented to the Government accordingly. The Lords of the Committee of Council on Education, on the motion of the Treasury, requested Her Majesty's Commissioners to provide a place for the reception of these articles, which the Commissioners were happy to do, and they remain at present deposited at Grove House, Kensington, until the question of their eventual exhibition to the public is decided. But no means at present exist of making such an exhibition, notwithstanding the admitted importance of so doing.

A similar difficulty exists in the case of the valuable collection of Models of Inventions now in course of formation under the authority of the Commissioners of Patents, through the praiseworthy and unremitting exertions of Professor Woodcroft, the Superintendent of Patent Specifications. The very limited space at the disposal of those Commissioners soon became full to overflowing, and they have been under the necessity of rejecting many important contributions from the want of means of exhibiting or even receiving them. Although Her Majesty's Commissioners have offered to give every accommodation in their power in the shape of stowage room on their premises, this in no degree meets the requirements of the case; for while on the one hand only a limited amount of assistance can thus be rendered, on the other the present inability to arrange, classify, and exhibit the models, entirely defeats the object for which this national collection is being formed.

Her Majesty's Commissioners would also refer to the case of the Trade Museum which is now in course of formation. You will be aware that as respects the two departments of mineral and vegetable produce, the Government has at considerable expense, and with much success, taken the necessary steps for their establishment and development in the Museum of Economic Geology and the Kew Museum respectively. But as the important department of animal produce has until now remained entirely unrepresented in this country, the Commissioners have been engaged jointly with the Society of Arts in forming the nucleus of that

department, and the result of their labours is to be seen in the interesting exhibition now open at the Society of Arts. But not only does the limited space there available prevent more than a small portion of the collection already formed from being displayed, but even that space must very shortly be surrendered for the other purposes of the Society, after which no means will exist of keeping open a museum so important to the commercial and mercantile interests, and which, from its very nature, ought to be a permanent and constantly increasing one. The Council of the Society have addressed pressing representations to the Commissioners, pointing out the importance of immediate steps being taken for placing this museum on a permanent and practical basis, as has already been done in the case of the museums connected with the above-mentioned departments of Government.

The case of the Department of Science and Art, which is now temporarily located in Marlborough House, by the special favour of the Crown, cannot be passed by entirely without notice on the present occasion ; for not only is the available space at the disposal of the Department quite inadequate to the proper display of the valuable and constantly-increasing museum attached to it, but the whole building (including the portion now devoted to the exhibition of part of the National Gallery of Paintings) must be surrendered at a period which is now rapidly approaching, in order to be prepared for the occupation of His Royal Highness the Prince of Wales, on his attaining the age of eighteen years, in pursuance of the provisions of the Act 13 & 14 Vict. c. 78.

The Commissioners might enumerate many other instances in which the same difficulty of want of space for purposes of exhibition is felt ; but they trust that they have stated enough to lead you to the conclusion to which they have found themselves compelled to come, viz., that the time has arrived when it is expedient that steps should be taken to provide for these various wants by means of the erection of a suitable structure, adapted alike for the safe deposit and the exhibition to the public of collections such as those above indicated.

Having given their best consideration to the question, the Commissioners are of opinion that an erection of corrugated iron, similar to the building of which the plans and specifications are sent herewith (Enclosure B), will be found to combine in the greatest possible degree the various elements desirable in a structure designed for such a purpose. Irrespective of its simplicity and cheapness, and the remarkable facility with which it can be constructed, it enjoys the great advantage, in a pecuniary point of view, of being designed of a material which possesses a permanent pecuniary value, to which the cost of the labour employed in its construction bears only a small proportion. While, therefore, it could on the one hand be at any time taken down and re-erected, if

necessary, on another site, or in another form, at a very trifling expense, it could, on the other, be re-sold, should circumstances render it hereafter desirable, at no great deterioration of value; while should it be found necessary, on the contrary, to enlarge it, in consequence of additional accommodation being required, the cost of so doing would be considerably less in proportion than the original cost, inasmuch as only two of the four sides would have to be extended.

As respects the locality to be chosen for the erection of such a building as that proposed, Her Majesty's Commissioners conceive that the estate at Kensington, purchased by the joint contributions of Parliament and themselves for the express purpose of promoting the establishment of institutions connected with science and the arts, presents every advantage for a purpose so entirely within the scope of the objects contemplated in that purchase, at the same time that no cost would be incurred by the country in purchasing or renting an appropriate site.

I am accordingly directed to request that you will have the goodness to take the above-mentioned circumstances into your favourable consideration, in the hope that you may be prepared, on behalf of Her Majesty's Government, to propose to Parliament, in the course of the present Session, the outlay of the sum required for the erection on the Kensington Gore estate of a building such as that indicated. Her Majesty's Commissioners estimate the cost (making the necessary allowance for contingencies, but adopting the simplest and most economical form of construction) at 12,000*l.*; and as it is impossible at present to estimate correctly the cost of the fittings, &c., the Commissioners assume that a sum of about 3,000*l.* will have to be added under this head to the building estimate, making a total sum required of 15,000*l.* (fifteen thousand pounds).

I have, &c.

EDGAR A. BOWRING.

The Right Honourable
the Chancellor of the Exchequer.

Enclosure A.

EDUCATIONAL EXHIBITION.

A Deputation from the Council of the Society of Arts, consisting of Lord Ebrington, the Chairman, and Mr. Harry Chester, V. P., accompanied by the Secretary, had an interview with Lord John Russell on the subject of the Government taking advantage of the present collection in St. Martin's Hall, for the purpose of establishing a permanent Museum of Education; and subsequently, on the request of the Chancellor of the Exchequer that the proposal of the Society should be put into writing, the following memorandum was drawn up and communicated to the Government:—

The extent and general character of the collections now in the Exhibition at St. Martin's Hall may be ascertained by the accompanying catalogue.

They have been got together by the Society of Arts, at a very heavy cost, and by very great exertions.

The Council has long been impressed with the conviction that, in order to maintain the Arts, Manufactures, and Commerce of the United Kingdom in a condition of progressive improvement, the education of all classes of the community must be improved; and it has been thought that, while the acerbity of religious differences continued to prevent the establishment of any general system of national education, a great improvement might be effected in the means and modes of instruction, and a considerable impetus might be given to an improved public opinion on the subject of public education, by a general exhibition which should afford a comparison not only of the existing means and appliances of instruction, but also (as far as possible) of the results which they have produced in the United Kingdom and Colonies, as well as in foreign countries.

It was hoped also that for such an object the representatives of the different associations for the promotion of public education in this country might be induced for the first time to unite; and that their union, even for this limited and specific object, might tend to remove prejudices, and to create a desire for a further and more lasting co-operation.

These expectations have been realized to a great extent. All parties have united to promote the success of the Exhibition; and its great utility has been affirmed by those most competent to judge of it.

Its defects, viz., a want of classification, and of the juxtaposition of analogous objects, are necessarily incidental to a temporary collection of multifarious articles, the property—not of the holders of the Exhibition—but of the several Governments, Boards, Associations, Schools, and individuals, scholastic and commercial, who have exhibited the objects, and who would not consent to break up their collections into fragments, difficult to be identified, and impossible to be properly watched.

These defects, however, would have no place in a permanent national museum, where all would be the property of the public, and available for the best possible arrangement.

The Council has always had in view the very great importance of establishing, on a permanent footing, an Educational Museum, open without difficulty to the visits of all inquirers.

The principal Educational Societies have already their repositories for the exhibition of articles for sale; but each society exhibits (generally) its own articles alone, and ignores those of other societies and of individuals unconnected with itself: and, having to a great extent a pecuniary interest in the articles which it exhibits, is not very ready to introduce competitive novelties.

The interests of education require a central depôt for the juxtaposition and comparison of the things recommended and approved by all the educational bodies, of the inventions of individuals unconnected with them, and of the material results of the different systems of instruction.

Great advantages would ensue if, from such a centre, specimens could be circulated throughout the United Kingdom; and if a systematic mode of co-operation with foreign countries could be effected.

The present Exhibition affords an admirable opportunity for the commencement of a Museum of Education. The collections at St. Martin's Hall comprise contributions from—

1. Governments, scholastic establishments, and individuals in foreign countries and the colonies.

Many of these articles have been already placed at the disposal of the Society for a permanent museum, and many more would doubtless be gratuitously applicable to the same object, if it were certainly known that such a museum would be established.

2. Public Boards and Societies for promoting education, and schools, public and private, in the United Kingdom.

Many of these are already at the Society's disposal, and it is probable that nearly all of them might be obtained gratuitously, or at a very low cost.

3. Manufacturers and vendors of books, maps, and apparatus.

The whole of these would probably be available without charge. Their admission to such a museum would be the best possible advertisement of them.

Such a museum is not likely to be of a self-supporting character, and the Society of Arts has no means applicable to the maintenance of such a museum in a state of progressive efficiency.

The Society of Arts, therefore, proposes that it should hand over to the Government such portions of the present collections as are the property of the Society, and that it should use its influence to procure for the Government such of the remainder as might be desirable, on condition that the Government should provide for the due arrangement and exhibition of the collection in a permanent museum, to be kept up and added to from time to time.

If the Government should be unable to provide immediately for the due exhibition of the collection, but should be able to provide immediately for its safe custody, with a view to its being exhibited as soon as may be practicable, the Council would be willing to promote such an arrangement.

An early decision is necessary, because the present Exhibition must be closed at St. Martin's Hall on the 31st instant, and because the Society must immediately make communications to the owners of the

articles exhibited, if it be desired that they should be placed at the Society's disposal for transfer to the Government.

The Society has reason to know that a public functionary of the United States has offered to purchase one of the largest collections in the Exhibition, and it is thought probable that similar offers may have been made to other exhibitors.

It would scarcely be creditable to this country that, when one of its Societies has brought together from all parts of the world a valuable collection of interesting and instructive objects, instead of means being found for retaining it permanently in public use, a foreign Commissioner should be allowed to purchase the collection, and transport it to the other side of the Atlantic.

By order of the Council,
(Signed) P. LE NEVE FOSTER, Secretary.

Enclosure B.

(1.)

19, Great George Street, Westminster,
London, June 13th, 1855.

GENERAL SPECIFICATION of IRON BUILDING suited for a MUSEUM.

The accompanying drawings represent the plan, elevations, and sections.

The building would be rectangular in form, 266 feet long, and 126 feet broad, and about 30 feet high to the eaves. The floor would be raised 2 feet off the ground, and be supported by joists resting on main foundation frames, or on dwarf walls, as may be deemed most advisable.

The building would cover an area of 3,700 square yards, exclusive of the galleries, which give an additional space equal to 2,700 yards, making an entire space for exhibition of 6,400 yards, or 1¼ acres. The walls of the building would be composed of cast-iron uprights or standards placed 7 feet apart, and tottled to a foundation frame of timber, or rest on concrete foundations, as the nature of the ground may render it expedient. The spaces between the columns would be filled up with corrugated sheets, and the interior of the walls lined with boarding, tongued and grooved.

The lower story would be lighted by windows, filling up the space between each alternate pair of standards, the runner which stiffens the wall forming the lintel of the same.

The building would be covered by three segmented roofs, each 42 feet span, supported on the outside walls, and on two intermediate rows of columns. The trusses would be of malleable iron, 7 feet asunder, and covered with corrugated sheets. A sky-light 12 feet wide, and raised

18 inches from the surface, would run along the entire ridge of each roof, the sides being fitted with moveable wrought-iron louvres.

Galleries 42 feet wide would be constructed down each side of the building, and fill up the whole space beneath two of the roofs. They would be connected at the ends by cross galleries 21 feet wide. And these galleries would be carried by a system of longitudinal and cross girders—the longitudinal girders being placed 14 feet apart, and at an equal distance from the outside walls, and supported by columns placed 14 feet asunder. The cross girders spring from each of the standards of the outside walls, the principal ones resting on the interior columns, and, the intermediate ones being tottled to the longitudinal girders. Joists are fixed between the cross girders, and the flooring spiked to them. The galleries are fenced by a light trussed railing, and lighted by the sky-lights in roof.

There would be six flights of stairs leading up from the ground-floor, one 7 feet wide at each angle, and two in the middle of the nave 14 feet wide. The water off the roof would flow into cast gutters beneath the eaves, which would discharge down the main columns of the building, and be carried off by a system of pipes beneath the floor.

A pair of cast ventilators, sufficiently large, would be placed in the walls between the windows on both floors, and the vitiated air escape by the louvres under the sky-light.

The entrance and exit to the building is effected by the doors placed beneath the verandah, within the recess at each end.

The whole of the iron work would be covered, within and without, with three coats of oil paint, and the interior wood casing varnished two coats.

The cost of the building as above specified, and shown in accompanying drawings would be about nine thousand eight hundred pounds (9,800*l.*); if with an architectural front of cast-iron from 1,000*l.* to 1,400*l.* additional, according to design.

Heating with a system of hot-water pipes giving a radiating surface of not less than 16,000 superficial feet, will cost from 900*l.* to 1,000*l.*

(Signed) CHARLES D. YOUNG & Co.

(2.)

GENERAL REMARKS.

The building would be constructed in bays of 14 feet square, or a multiple of that number. By adopting this principle, we obtain greater economy in first construction, facility of extension, or removal and re-erection.

In the absence of any instructions to the contrary, the whole building is calculated to be of the strongest and most substantial character, and the various materials the best of their respective kinds.

The building is calculated to sustain a moving load of 100 lbs. to the superficial foot, both in gallery and ground-floor.

The interior casing renders the walls double, within which there would be a constant current of air, securing comparatively an equable temperature within the building both in summer and winter, and greatly facilitating the ventilation and heating.

The estimates of prices are to be received as proximate, but they may be assumed as tolerably near the amounts stated, the circumstances of ground and foundations being of an ordinary character.

(3.)

PLAN, &c.

(*See* accompanying engraving).

II.

BOARD of TRADE REPORT on the above APPLICATION.

Office of Committee of Privy Council for Trade,

SIR, Whitehall, July 31st, 1855.

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of your communication, transmitting, for their consideration, by desire of the Lords Commissioners of Her Majesty's Treasury, copy of a letter addressed by Her Majesty's Commissioners for the Exhibition of 1851 to the Chancellor of the Exchequer, urging the importance of an application being made to Parliament in the course of the present session for the vote of a sum of 15,000*l.* for the erection (with the necessary fittings, &c.) of a structure of corrugated iron on the Kensington Gore Estate, adapted for the purpose of receiving and exhibiting various museums and collections connected with science and the arts, for which no accommodation can at present be found, and submitting drawings and specifications of the building which the Commissioners consider to be best adapted for the object in question.

My Lords observe that the collections to which the Commissioners more especially refer in their letter are the following:—

1. The Museum of Education, the nucleus of which is at present possessed by Her Majesty's Government, although the want of space has prevented its being exhibited or turned to any account hitherto.
2. The Museum of Patented Inventions, now in course of formation, under the authority of the Commissioners of Patents.
3. The Trade Museum, of which the mineral and vegetable departments are already in the possession of the Office of Works and the Board of Trade, and exhibited to the public at Kew and the

Jermyn Street Museum respectively, while the animal department of it has just been formed by the joint exertions of the Commissioners and the Society of Arts, and is at present temporarily deposited and displayed in the Society's rooms until arrangements can be made for its permanent exhibition; and,

4. The Museum at Marlborough House, belonging to the Science and Art Department of this Board, to which more especial reference will presently be made.

As respects the Educational Museum, a subject, however, more especially within the province of the Committee of Council on Education, my Lords cannot but feel that great advantage would result from the exhibition of the articles already in the possession of the Government, combined with those which it may be expected will be added to them when a proper place for their reception is provided, and that the memorandum from the Society of Arts which is enclosed in the Commissioners' letter, and which appears to have been favourably entertained by the Lords of the Treasury, contains conclusive arguments in favour of such an exhibition.

Similar remarks apply to the collection of models of inventions formed by the Patent Commissioners, who are stated to be entirely unprovided with the means of exhibiting those models in the limited space at their disposal, while the importance of their being made available for the general use of the public is admitted on all hands.

With regard to the Animal Produce Museum, my Lords have been informed that the Society of Arts are prepared to make over to the Royal Commissioners their interest in the valuable collection that has been formed, on condition of measures being adopted for the immediate reception and arrangement of the collection, with a view to its exhibition, and its continuance as a permanent and advancing collection. Their Lordships cannot but be anxious for the adoption of such measures as may ensure the permanent exhibition to the public of this branch of a Museum, another department of which is at this moment under their own immediate control.

But it is more especially in the case of the Marlborough House Museum that my Lords feel the importance of providing proper accommodation without loss of time. Not only will it be necessary in a few years' time, as pointed out in the Commissioners' letter, to make arrangements for the removal from that building of the whole of the Department of Science and Art, but even at present the portion of the house devoted to the purposes of the department has proved to be entirely inadequate to its pressing requirements. While, on the one hand, its various schools are compelled to be dispersed in different parts of the building, and in

temporary erections adjoining it, instead of being contiguous to each other; on the other, the rooms are found to be very ill-suited for the purpose of exhibiting the valuable Museum belonging to the department, which is so highly appreciated by the public. Irrespective of the bad light and the great difficulty of maintaining a proper supervision of the articles, and their great liability to injury, the want of space has rendered it necessary to confine the purchases of articles to small specimens only, and at present the department is quite unable to exhibit many of the valuable objects possessed by it. On these grounds my Lords would see with much satisfaction the adoption of such measures as may be calculated to provide a remedy for the evils in question.

Their Lordships, taking all these circumstances into consideration, have come to the conclusion that the adoption of the recommendations made by Her Majesty's Commissioners would be of advantage to the public service; and that it is expedient that an application should be made to Parliament in the course of the present Session for the grant of the necessary funds accordingly. It further appears to my Lords, that the structure of corrugated iron, suggested by the Commissioners, is well adapted for the purpose in question, and they have no doubt that, while it possesses all the advantages, in a pecuniary point of view, pointed out by the Commissioners, and will be found of great utility in providing for present wants, it will at all times, and for a lengthened period, prove of much service, through the facilities offered by it for the reception and accommodation of articles belonging to those various departments of the State which are more or less connected with the interests of Education, Science, and Art.

I have, &c.
JAMES BOOTH.

The Secretary to the Treasury,
&c. &c. &c.

ION OF 1851.

LONDON:
Printed by GEORGE E. EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.